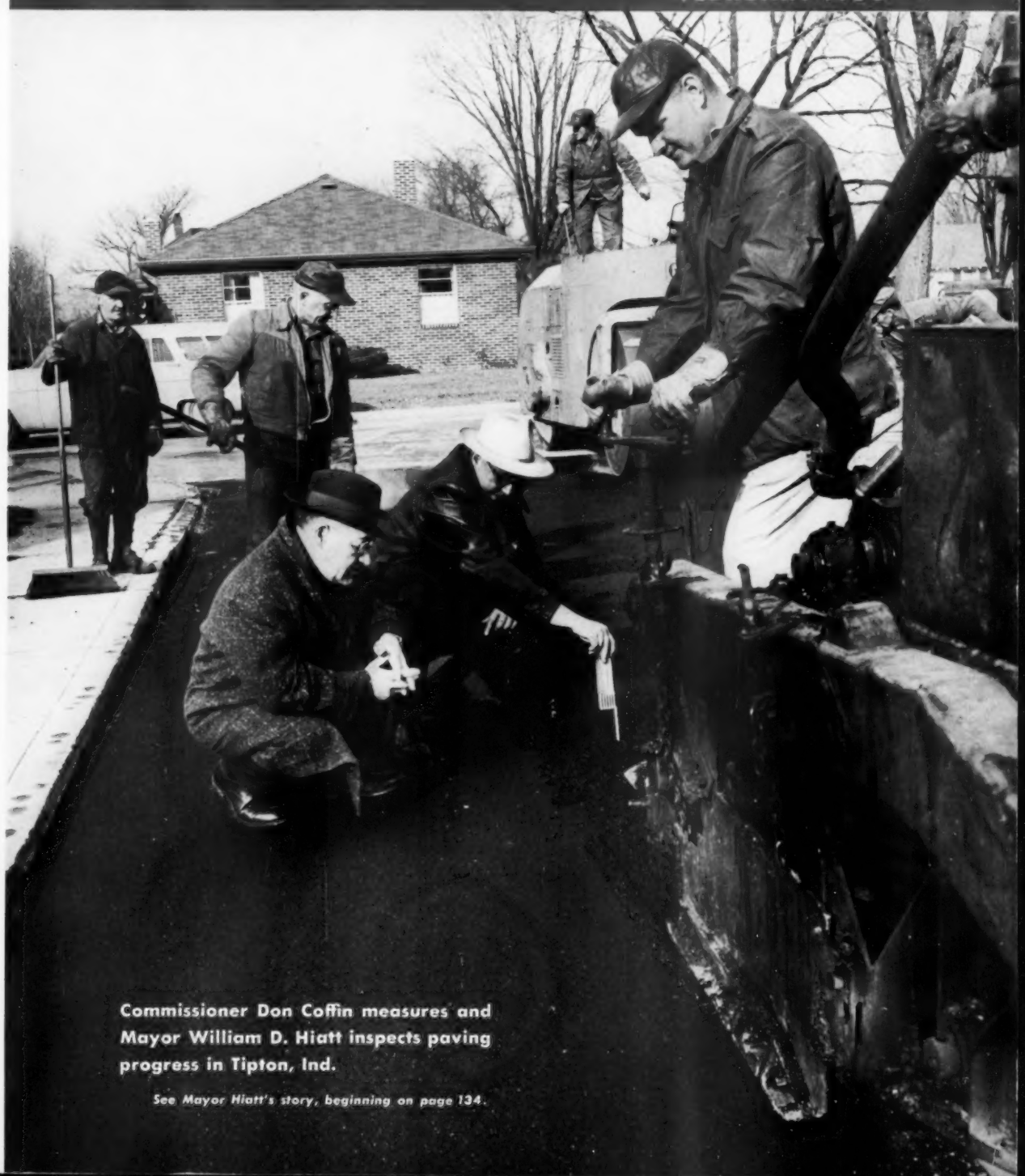
The American City

FEBRUARY 1956



Commissioner Don Coffin measures and Mayor William D. Hiatt inspects paving progress in Tipton, Ind.

See Mayor Hiatt's story, beginning on page 134.

38 miles of this paving for Madison, Wisc. streets

The 3-inch Texaco Asphaltic Concrete pavement recently constructed on Carroll Street is typical of the Wisconsin capital's large mileage of this durable skid-resistant paving.

Contractor . . Rein and Schultz
Texaco Asphalt supplied by Scotch Oil Company

The best indication of how a city rates a pavement is the mileage of that type constructed on the city's streets. Last year, Wisconsin's capital city paved six miles of its streets with resilient, heavy-duty Texaco Asphaltic Concrete. Approximately 38 miles of this durable, yet economical, paving has been laid in Madison over the past ten years.

Hot-mix Texaco Asphaltic Concrete has a number of advantages which make it an ideal pavement for city streets. Its resilient, flexible quality enables it to absorb heaviest traffic impact year after year with a minimum of upkeep. The speed with which it is laid and opened to traffic is appreciated by motorists and merchants alike. Its skid-resilient texture and the sharp visibility of white traffic lines against the dark pavement are important aids to safe driving. During the winter months, not only is Texaco Asphaltic Concrete immune to ice control salts, but its dark, heat-absorbing color causes snow and ice to melt more rapidly.

Helpful information on methods and materials recommended for Texaco Asphaltic Concrete, as well as all other types of asphalt construction for city streets, is presented in two free Texaco booklets. Municipal officials may obtain copies without obligation by writing our nearest office.

THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York City 17
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TEXACO REG. T. M.

TEXACO ASPHALT

FEBRUARY 1956

The American City

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The Cover Picture

The interest of Mayor William D. Hiatt, ex-school teacher, and Street Commissioner Don Coffin, a professional engineer, in the best dollar value in streets is intense and thorough. The cover picture, taken of them inspecting the way a Barber-Greene paver places the hot mix and a Galion roller compacts it, typifies the detailed attention they give to this work. The story from Tipton, Ind., begins on p. 134.

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The Spirit of Service That Keeps on Growing

There is a heritage of service that is passed on from one generation of telephone people to another.

It had its beginning more than eighty years ago when Alexander Graham Bell gave the world its first telephone. It has grown as the business has grown.

Many times each day and night this spirit of service is expressed in some friendly, helpful act for someone in need. The courtesy, loyalty and teamwork that telephone people put into their daily jobs are a part of it.

Out of it have come the courage and inspiration that have surmounted fire and flood and storm.

We, the telephone people of today, are vested with the responsibility of carrying on this trust. It is human to make mistakes and so at times the job we do for you may not be all that we want it to be. But in the long run, we know that how we do our individual job and how we bear our individual responsibility will determine how we fulfill our trust.

For our business is above all a business of people . . . of men and women who live and work and serve in countless communities throughout the land.

BELL TELEPHONE SYSTEM

Easier Traffic Flow, More Asphalt Research

It may be a little late to comment on the benefits of streetcar rail removal that Hugo G. Erickson does so well in Minneapolis ("What We Do About Old Streetcar Rails," October 1955, p. 114). Nevertheless, you may be interested in the extra traffic-handling dividend that we get from this work in Detroit. We have abandoned almost all of our car lines now and expect to abandon our last two—Woodward Avenue and Gratiot Avenue—shortly. In each case, our method was similar to the method used in Minneapolis.

When we covered the tracks on Fort Street, the route of a federal highway, our traffic engineers proposed that a center lane be reserved for left turns. This has been so successful that we are now putting center lanes in all of our main arteries that are wide enough. The center left-turn lane not only allows a much freer flow of traffic, but makes a good refuge zone for pedestrians. Our accidents have been greatly reduced (both pedestrian and automobile).

Our first big resurfacing program in Detroit after the war convinced me that asphalt paving research had been neglected for many years. We have set up a research division in connection with our Asphalt Laboratory, under the City Engineer's Office. Currently, the work is concentrated chiefly on stability, wearing, and nonskid properties of asphalt paving placed during the past 15 years in Detroit.

We have also done considerable plant testing of stability, using the Marshall method and equipment. This research work has utilized various types and sizes of aggregates, including slags, combined with natural sand and slag sand. While we are not yet ready to draw conclusions on the use of these various mixes, we will be glad to exchange information with other cities who are also doing this kind of research work.

GLENN C. RICHARDS
Commissioner of Public Works
Detroit, Mich.

Small Towns Can't Do Without Records

A Chinese sage is credited with saying that one picture is worth a thousand words. That this is as true today as when first uttered, is exemplified by the interesting article by Frank Behan in the November issue ("A Picture Record Helps City Expand Water System," p. 124). Photographs of valve boxes referenced from fixed structures leave no doubt about their location. Even if trees, poles, and buildings are missing when you consult the original photograph for a valve which was referenced to them, you can get an approximate location of the valve by consulting the photograph. Photographs of excavated pipe connections are particularly valuable and excel the finest memory.

The use of photographs, with dimensions and other data inked in, is original and ingenious. Why not use these pictures as a supplement to pipe drawings? Mr. Behan suggests that many small towns might be unable to afford a draftsman. Is there a small town that can afford to be without a draftsman?

Small towns have a way of becoming big towns, and communities without adequate records of underground facilities operate at a decided disadvantage. A town engineer should know the size, material, age, and location of all water and sewer pipes. How else can he intelligently plan future extensions? He should know where his water valves are located, their size, and whether they open clockwise or counter-clockwise.

A good way to reference valve boxes in city streets is to measure from curb lines. Valve boxes can be covered with snow or even a thin coating of paving material which makes them very hard to find. Most valves in a city distribution system are at street intersections and if they are shown on a map—so many feet south of the north curb and so many feet east of the west curb—they are readily located. Curb lines are usually unobstructed by parked cars and can be seen even when snow is on

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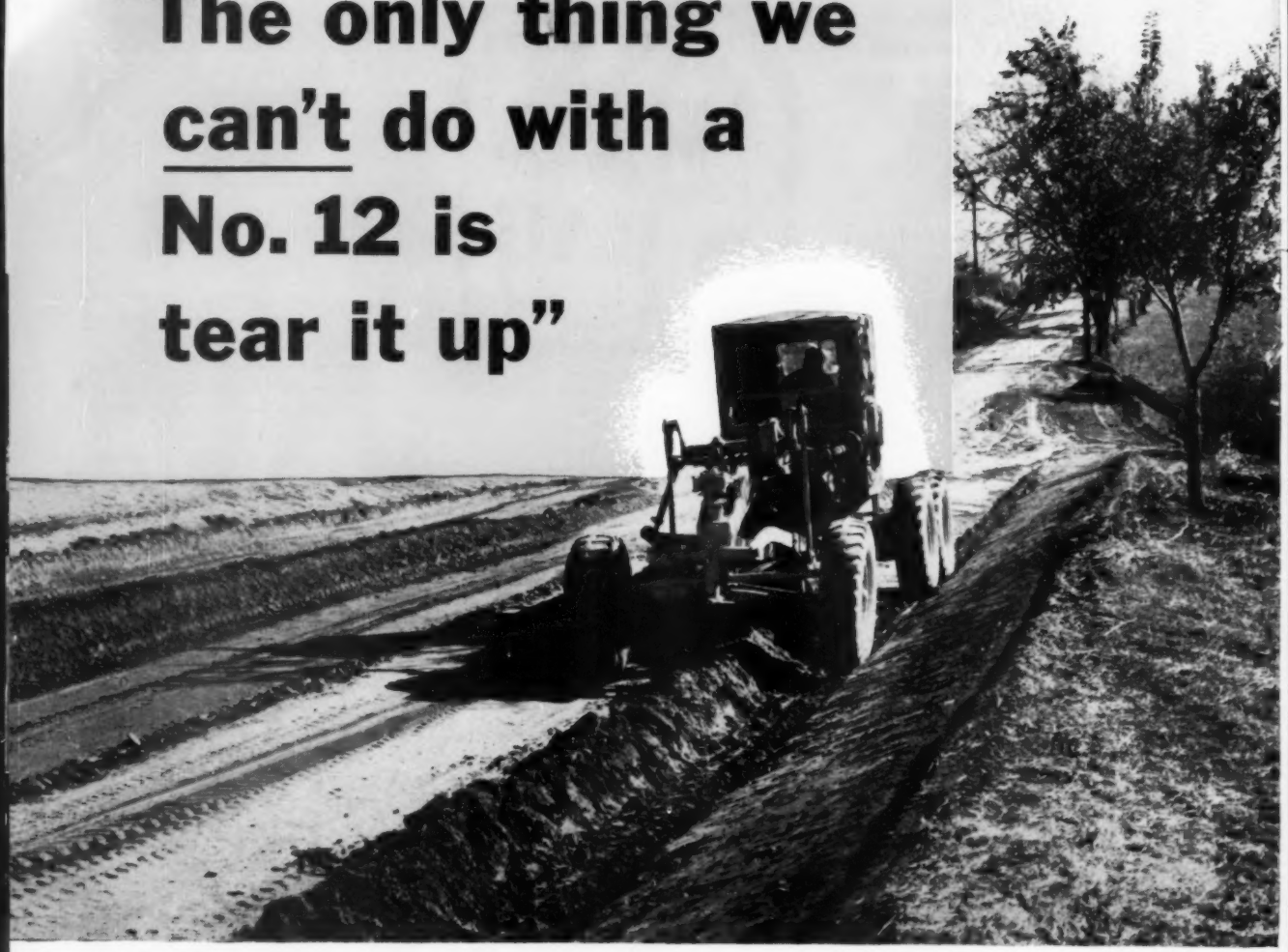
"The only thing we can't do with a No. 12 is tear it up"



Summer and winter, Leavenworth, Kansas, keeps its Caterpillar No. 12 Motor Grader on the go. Look at the partial list of jobs done by this versatile machine, as reported by Superintendent Bernard J. Cassella, of the Department of Streets and Public Improvements:

"Has opened six blocks of streets in one month, making cuts up to six feet deep . . . ditches and fills streets, and prepares them for oiling . . . cuts and windrows up to 800 yards of dirt a day for our Athey loader . . . rips up old asphalt . . . mixes cold asphalt . . . with Athey loader and another grader keeps 53 downtown blocks clear of snow. The CAT* No. 12 is great for punishment. The only thing we *can't* do with it is tear it up," Mr. Cassella says.

This No. 12 gives the residents of Leavenworth a real return on their tax dollars through low operating costs and high production. And the new No. 12 is better than ever. Among other improvements it has the exclusive Caterpillar Oil Clutch, which reduces wear, can give you 1500 hours without adjustment.

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the ground so that they make good reference lines. Since curbs at intersecting streets are always rounded, the curb lines must be projected, but this can be done readily by eye with a little practice.

In the engineering office of the Division of Water Supply, Newark, N. J., are street maps drawn to a scale of 100 feet to the inch. Water pipes are located to scale in each street and valves are indicated by a symbol. The size of pipe is shown as well as the year laid. Each valve is numbered and its size and locations are given.

These are the master records and are kept up to date. For the use of the various crews, blueprints are drawn to a scale of 200 feet to the inch. These, too, are kept up to date and revised prints are issued as needed. A card file is kept in the office and a record is made of each valve. Size, location, type, date of installation, times of operation, position of valve when found and when left, are all entered on the individual cards. Crews operating, inspecting, or repairing valves make out slips showing valve number, size, location, and what was done. These are forwarded to the engineering office daily and the data is entered on the appropriate cards.

Records of this type are invaluable. Whether the town is large or small, whether it is expanding or not, these data must be available, complete, and up to date. No longer do you have to rely on some individual who "remembers where the valves are." He might resign.

LAURIE M. LEEDOM
Assistant Division Engineer
Division of Water Supply
Newark, N. J.

Recommendations for Preventing Juvenile Delinquency

I was very glad to see, in the January issue of THE AMERICAN CITY (page 145) that you have called the attention of your many readers to the recent report of the Citizens Union of New York on juvenile delinquency.

Not, in my opinion, until there is a more vigorous and effective community attack upon delinquency and not until there is much more general acceptance by our citizens of responsibility for ameliorating the conditions under which delinquency flourishes will there be an improvement in our situation. At the recent International Conference on Prevention of Crime in Geneva the question of community organization was given prior place and included this statement in the recommendations adopted by sixty-three nations:

> **The Congress recognized that the community provides the environment in which social institutions mold the child's behaviour patterns of personality. The neighborhood in which young people live is perhaps the most fundamental phase of community influence. The factors which shape character derive very largely from these community influences as they operate through the family, the school, the church and other social institutions. Community action to prevent juvenile delinquency is to a great extent a matter of organizing a variety of community resources. . . .**

Our people have shown in other respects that we have the courage to face and the persistence to overcome obstacles. Crime is a symptom of social disorganization. It cannot be that the great majority of people prefer a growing crime rate. They will soon realize that that segment of our population to which we refer as the "criminal army" is recruited from our own neighborhoods and can be controlled only by those same neighborhoods.

SANFORD BATES
Pennington, N. J.
(Former Commissioner of the New Jersey State Department of Institutions and Agencies)

Recording Sewage Flows

The bubbling purge system employed by U. E. Whiteis at Columbus, Ohio, and described in the article "A Low-Cost Sewage-Gauging Station —That Works" (September, p. 164), appears to have solved many problems of gauging and recording hydraulic levels of sewage flow.

However, no matter how accurate or reliable the measuring device may be, it measures and records only the difference in hydraulic levels at the recording point and not necessarily the flow of sewage. Mr. Whiteis has doubtless considered this problem and probably has the solution. It might be interesting, in this regard, to review some of the experiences in sewer gauging encountered during the preparation of the "Indianapolis Sewer Report—1946."*

The sewage flow data at Indianapolis were collected by means of stick gaugings at regular intervals rather than by continuous recordings. These gaugings were used in connection with previously determined velocities for various sewage depths at the gauging points. The salt-ammeter method was employed to determine the velocities.

By using these values of velocity and depth, it was possible, using Manning's formula, to arrive at values of "n." These values were then used to determine maximum flows in the present sewers for the design of storm relief sewers.

The point to be made here is that the values of "n" (the roughness or resistance to flow coefficient) were not constant for the various depths of flow. Also, in some cases, where the depth gaugings were almost the same, there were unaccountable differences in the values of "n."

These data are no longer available so that further analysis is impossible. However, unless a length of pipe is particularly designed for that purpose, it would seem that the ordinary sewer might produce a record of surprisingly erratic flows when the conduit is flowing less than full.

It would be very interesting to know what Mr. Whiteis' experience has been in this regard.

ROBERT L. MEEK, *Consulting Engineer*
Hannan, Meek and Cordill
Indianapolis, Ind.

* EDITOR'S NOTE: This report was discussed in the January 1948 issue of THE AMERICAN CITY, "Indianapolis Makes A Sewerage Analysis," p. 96.

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A part of the New London, Minnesota public water supply project was the addition of a 50,000-gal. Horton Watersphere®. Erected on one of the highest hills in the village, this modern streamline structure assures the progressive community adequate water pressure at any hour of the day or night.
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Spheroidal Storage at Sandwich, Ill.

AT Sandwich, Ill., Mayor Leonard Barter and his Board of Aldermen decided to pay a little more for an elevated tank and get one that not only cost less to maintain, but looked better, too. The city's new Waterspheroid, holding 300,000 gallons, met their specifications. It was designed, fabricated, and erected by the Chicago Bridge and Iron Company which is another step to insure adequate water supply to the people of Sandwich.

The new big tank provides storage in a graceful way.

The tank represents only a part of the improvements to the water system. The city is currently adding more than 5 miles of mechanical joint cast-iron pipe to the distribution piping. This is being supplied by the American Cast Iron Pipe Company and ranges from 4 to 12 inches in diameter. The enlarged system is also getting 36 new Waterous fire hydrants. The pumping stations, too, are scheduled for improvement.

The entire system is operated under the direction of H. W. Hensinger, water superintendent.

Just as the Mayor Predicted . . .

JUST as Mayor Herbert Brown anticipated, Clearwater, Fla., has sold its recent $1,500,000 utility revenue certificates for less than 3%. The effective interest rate was 2.9105%, the lowest ever obtained by the city and one of the lowest ever achieved by any community in Florida. Some of the securities sold for an interest rate of only 2.25%.

Improvements to Be Made

Clearwater will use the funds for water and sewer improvements. About $600,000 will be spent for water improvements; $400,000 for sanitary sewers; $80,000 for storm sewers; and an additional $399,000 to retire certain other utility revenue certificates. This last item permits the city to free the municipal gas system of indebtedness, and to plan for a changeover to natural gas when available, or to sell the system if desirable.

The city's water improvement is already under way. It includes a 300,000-gallon elevated steel water tank that is being erected by the Hammond Iron Works. For the main transmission piping, the city is using 20, and 24-inch Lock-Joint concrete pipe, and for the distribution system, U. S. Pipe and Foundry cast-iron pipe. The system will be equipped with M & H valves and fittings, and Mueller hydrants. Sewerage work is expected to begin shortly.

The improvements to the water and sewer systems are being designed by Briley, Wild and Associates of Daytona Beach, Fla.

Salt-Water Conversion Still Expensive, but . . .

THE ocean still is out of reach, economically, as a potable water supply, but the dollar differential between it and fresh-water supplies is getting smaller. So explained Dr. Louis Koenig, vice president, Southwest Research Institute, San Antonio, Tex., at the Southwest Section, AWWA, meeting in that city recently.

At present, 26 large-scale saline-water conversion units are producing fresh water throughout the world; however, their total output amounts to less than 7,000,000 gallons daily. The largest produces 1,200,000 gallons per day; the smallest, 40,000 gallons. They average 250,000 gallons per day. Seventeen are in foreign countries, four on shipboard, and five are in this country. Those in the United States produce 650,000 gallons daily.

The multiple-effect evaporators appear most popular, accounting for approximately 5,000,000 gallons per day; and the vapor-compression distillation method for somewhat more than 1,000,000. There are 14 of the former plants and 12 of the latter. Some feel that the multiple-effect evaporators are best for the larger systems.

On a construction-cost basis, the salt-water converters already can compete with fresh-water systems. For example, the vapor-compression systems have been built for a cost of $6.70 per gallon of daily rated capacity and the multiple-effect evaporators have been built for as low as $3. In contrast, some California aqueduct and reservoir installations have cost $4.30 per gallon.

The cost of operation, however, does not present such a favorable figure. Most saline-water converters cost $2.50 per 1,000 gallons, whereas fresh water systems can operate at an average of 15c to 20c per 1,000 gallons. Dr. Koenig suggested consideration of salt-water converters with electric power plants that already produce heat in order to lower costs.

Some research on vacuum evaporation from a thin stretched film shows promise, he stated. A plant designed to produce 1,000,000 gallons daily, amortized over a 40-year period, might be able to deliver saline-free water at a cost of only 60c per 1,000 gallons.

Currently, atomic power has not proved promising. At present atomic energy is more costly than energy generated by more conventional means. Sunlight has proved somewhat promising, able to supply water at a cost of $1.70 per 1,000 gallons, however, it requires a great amount of land area.

Freezing the water shows some promise since the water that freezes is salt-free; however, it still remains largely experimental.

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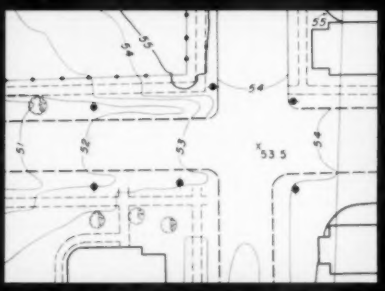

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For design and location of highways, streets, bridges, sewage-disposal plants, flood control, waterways, utilities and public works projects.

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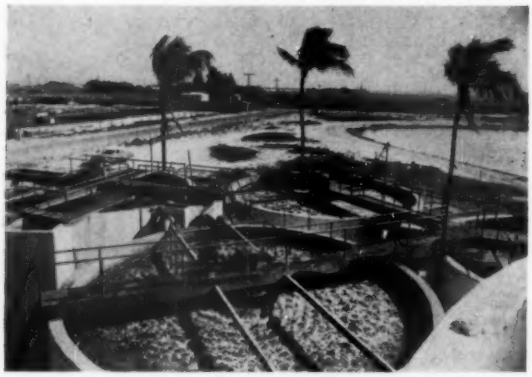
Manchester, England, Favors Surface Aeration



The surface aerator that performed so well in Manchester, England, is similar to this one in use at Carol City, Fla.

ACTIVATED sludge performs most efficiently when induced by a conical-type surface aerator, according to a performance study made at the Manchester, England, sewage works. A report delivered by the Rivers Committee of that city showed that this method purified the sewage more thoroughly, required less power, and needed a shorter aeration period than others used at this plant.

The surface aerator is known as the Ames Crosta Mills Simplex. Yeomans Brothers Company of Melrose Park, Ill., is the licensee in the United States, marketing the aerator under the tradename of Hi-Cone.

Type of Sewage Received

The plant receives a sewage not unlike that contributed to many plants in the United States. It is a mixture of domestic sewage, trade wastes, and storm water. The bulk of the area served utilizes a system of sewers that combines the storm water with sewage and trade waste. However, the plant has a storm-water overflow to limit the amount of sewage that the plant must treat during heavy rainfalls. This overflow is arranged so that the plant will receive sewage at the rate of 84 mgd. The plant receives an average of 70 mgd, or the equivalent of 84 gallons per person per day. The methods of treatment and quantities involved were reported as follows:

Treatment Methods

	Per Cent
Storm water overflow	18
Primary sedimentation only	21
Settling plus primary contact beds	4
Settling plus primary and/or secondary contact beds	27
Bioaeration activated sludge	1
Hi-Cone	3
Diffused air activated	26

The sewage itself exhibits those characteristics listed in the following sewage analysis table.

Sewage Analysis

	Raw Sewage	Primary Settled
	(Parts per million)	
Biochemical oxygen demand	224	167
Suspended solids	226	69
Organic and volatile solids	148	46
Mineral matter (residue after ignition)	78	23
Ammoniacal nitrogen	25	25
Albuminoid nitrogen	7	5

The bioaeration system uses rotating paddle blades to introduce the air into the sewage. The diffused-air system is basically similar to the activated sludge process used commonly in this country, requiring an average of 1.16 cubic feet of air per gallon of sewage. The average operating results of all three types ran as follows:

Comparison of Results

	Bio-aeration	Hi-Cone	Diffused Air		
			Unit 1	Unit 2	Unit 3-7
Average volume of settled sewage treated per operative day (mgd Imperial)	0.86	2.2	3.1	2.9	12.4
Average detention period in aeration tanks, hours	12.9	7.4	10.5	11.5	10.6
Average horsepower used per million Imperial gallons	25.0	24.3	37.3	40.6	37.9
Average composition of effluent (p.p.m.)					
B.O.D.	26.0	20.0	25.0	34.0	36.0
Suspended Solids	24.0	23.0	24.0	29.0	31.0
Albuminoid nitrogen	2.2	2.0	2.3	2.7	2.7
Purification of raw sewage					
B.O.D. removed	88.5%	91.2%	88.5%	84.8%	84.1%
Suspended Solids	89.4%	90.0%	89.4%	87.2%	86.3%
Albuminoid nitrogen removed	67.3%	69.5%	64.6%	59.2%	59.0%
Purification of settled sewage					
B.O.D. removed	84.6%	88.2%	85.2%	79.7%	78.8%
Suspended Solids	65.2%	66.8%	65.2%	58.0%	55.0%
Albuminoid nitrogen removed	52.7%	55.6%	48.6%	40.7%	40.4%

Conclusions

Thus the report records that the Hi-Cone surface aeration system required less detention and less power to operate. At the same time, it produced an effluent of measurable higher quality. The report also stated that, with this system of surface aeration, the flow of sewage fed to an aerator can be easily made to fluctuate according to the way in which the main flow entering the works varies. Furthermore, the treated sewage is noticeably more free of foam than the diffused-air plants. Foam in the Hi-Cone plant has been confined mainly to the corners of the aeration pockets situated toward the outlet end of each line of cones, and has not been unduly troublesome.

The report was prepared under the direction of James McNichols, general manager of the Rivers Department, and covered the year ending March 31, 1955.

Mayor Harry Blunt and City Manager John Biery approve the *third* Gamewell System to be chosen by Colorado Springs in sixty-six years.

Colorado Springs Buys Third Gamewell System

City-wide survey basis for specifying municipally-owned coded fire alarm telegraph network.

That faithful red fire alarm box on the corner is growing hand-in-hand with Colorado Springs. The original Gamewell System was installed in 1889, followed by a second system in 1914. The third, now being installed, was selected after an exhaustive cost and safety comparison with voice-type service.

Gamewell helped Colorado Springs expand its fire protection to meet modern growth and high value concentrations by making a city-wide survey in 1954. The detailed report, with maps, costs and recommendations, showed how a coded telegraph system gives the entire community, *safe*, fast and reliable alarm facilities to meet all their needs exactly.

Call for a Gamewell Survey

Don't fall behind the growth pattern of your city. A Gamewell Survey can pin-point — and anticipate — alarm system requirements. Use it to get up-to-date and stay up-to-date . . . a Gamewell fire alarm system costs less and gives maximum protection.

THE GAMEWELL COMPANY
NEWTON UPPER FALLS 64, MASSACHUSETTS
In Canada: Northern Electric Co., Ltd., Belleville, Ont.

Remember — a Gamewell System is **FIRST** when SECONDS Count!

GAMEWELL®
THE BOX IS POSITIVE
Reduces Human Error

Public Safety

Identifying Disaster Victims

(Above) Texas City, Texas, engulfed in fire and smoke, is shown as it looked at the height of the disaster. Figuring out identification of one of the victims (right).

WHAT do you do when your city is laid waste by a disaster? Texas City, Texas, on April 16, 1947, is the closest any American community has come to simulating the destruction of an atomic-bomb attack and its dreadful aftermath.

The photographic and written record of that disaster and its handling by police and safety agencies still presents the basic pattern for coping with the worst that can happen. There are the problems of evacuation, aid and shelter, of clearing debris, and of rebuilding. And there is the problem of identifying hundreds of charred and dismembered bodies.

A 42-minute motion picture was made by the Texas Department of Public Safety outlining how 400 bodies were identified by information from the body, information about missing persons, and correlation.

Problems of Identification

Most police agencies run into situations where the finding of a partly decomposed body, perhaps of a murder victim, presents a considerable problem of identification. Multiply this 500 times, dismember many of the bodies, destroy much of the clothing and personal effects, and you have a Texas City.

"You start with fingerprints," says Glen H. McLaughlin, Chief of the Bureau of Identification and Records of the Texas Department of Public Safety. At Texas City, fingerprints were often impossible. Many of the bodies were armless when found—or had been burned so badly that prints could not be obtained. The next step was to try to build the best possible description of the body, including tattoos and scars. A problem was to keep personal effects with the proper bodies, keeping parts of bodies together, and keeping all properly labeled.

While still photographs serve an important need in helping in the job of identification, the experience of the Texas Department of Public Safety—which uses movies for record purposes in cases ranging from a bus collision to the Texas City disaster—would indicate that this may be a neglected area in which more police agencies might profitably expand their operations.

THE 12th annual International Arson Investigator's Seminar will be held at Purdue University from April 23-27. The training program will include instruction in advanced investigative techniques, and review of latest laboratory aids and specific training that will lead to more effective detection, apprehension, prosecution and conviction of the arsonist. For complete information concerning the seminar address Professor Shelby Gallien, Seminar Director, Public Safety Institute Purdue University, Lafayette, Ind.

* * *

Decals for Bicycles

THE decal used by the Los Angeles Police Department for licensing and identifying bicycles is pictured (half size) here. The advantages claimed for decals are lower cost than metal plates and easier application. The Los Angeles City Bureau of Standards passed this type of decal, made by The Meyercord Company, 5323 West Lake St., Chicago 44, Ill., as outstanding in adhesion, abrasion test, and weathering qualities.

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No other sanitary refuse collection unit serves so many, so well! Here are a few of the many reasons for this overwhelming preference:

Municipal officials prefer Load-Packers because they reduce refuse collection costs. Faster loading, positive compaction and complete dumping add up to greater production, better service per dollar invested. Load-Packers save time in narrow alley operation, too. Shorter turning radius means less time lost jockeying tight alley turns.

Public health authorities endorse Load-Packers because they're fully enclosed, leakproof and odorproof. Bacteria-laden refuse and liquids cannot spill and drip onto city streets.

Tax-payers like Load-Packers because they collect everything. No selective loading . . . nothing left for taxpayers to dispose of themselves. And low-level loading eliminates spillage, keeps streets clean of broken glass and paper.

Private collection contractors choose Load-Packers because they handle bigger payloads. This means fewer trips per day to the disposal point . . . bigger loads dumped when you get there. Load-Packers save money on maintenance, too. They're fully hydraulic for smooth, trouble-free operation . . . built to outlast several truck chassis.

You'll prefer Load-Packers, too, once you get the complete story. Check the full line of Gar Wood Load-Packer models, ranging in capacity from 10 to 24 cubic yards. Just call your nearby Gar Wood-St. Paul truck equipment distributor, or write direct to Customer Service Department, Gar Wood Industries, Inc., Wayne, Michigan.

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Street Construction & Maintenance

Master of Many Trades

Above. **Edmonton, Alberta, requires that its street construction equipment be a master of many trades. For example, the city owns a pair of Model C Tournamatic Tournapulls and a tractor that have proved themselves able to pitch into every kind of major construction job as well as adapt to the smalll ones like leveling a backyard. Here, the equipment is shown stripping overburden in a new section of a gravel pit.**

Left. **En route to a resurfacing job, the team of Edmonton's equipment travels through one of the city's main thoroughfares, neither damaging the surfacing it is riding upon nor disrupting the flow of traffic.**

Soil Cement for Beach Road

Waukegan, Ill., residents now enjoy a new smooth access road to nearby Illinois Beach State Park at a cost well below preliminary estimates. Savings were made possible by soil cement construction in which the base carries a 2-inch layer of asphalt surface. The self-propelled Tampo roller pictured at the right played an important part in the project.

Street Cleaning & Refuse Disposal

Little City Cuts Costs With Mechanical Sweeper

Operating costs have dropped and street sanitation standards have risen in Marceline, now that this sweeper is on the job.

A MECHANICAL street sweeper has cut the operating cost of street cleaning in half in Marceline, Mo., according to R. S. Cantwell, city engineer. The city has a population of 3,200, embraces an area of 3 square miles, and has 2½ miles of paved streets with curbs.

The sweeper that Mr. Cantwell uses to clean the streets is an Austin-Western. It covers the business district once each day, and the outlying streets twice per week.

Prior to the time of purchasing the sweeper, the city employed one man to sweep the streets at a salary of $100 per month. The arrangement proved most unsatisfactory. Since purchasing the sweeper, the city has had an operating cost of approximately $50 per month, excluding depreciation on the equipment. This cost does, however, include the refilling of brooms. Each broom lasts around two weeks. The sweeper operator receives a salary of $250 per month.

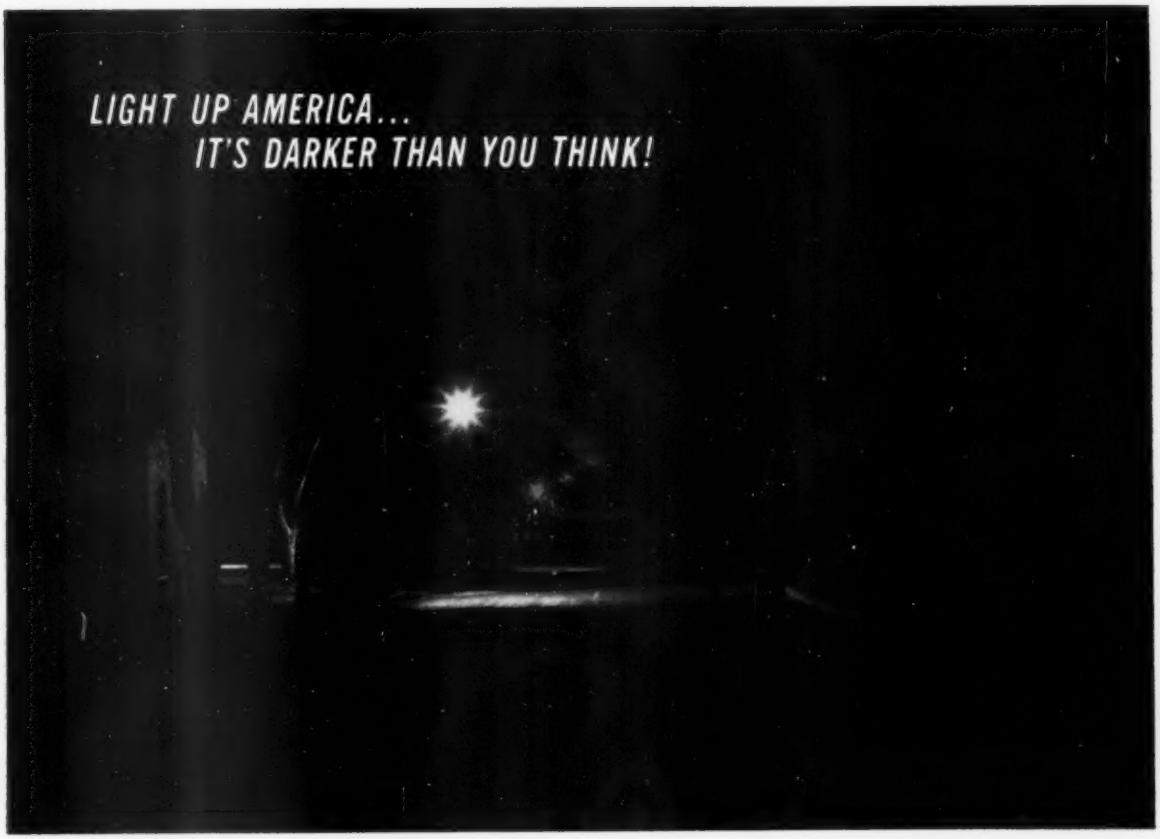
Maneuverable Safety Belts

ALL floor-dump incinerators have one serious danger point. A man can fall through the charging gate into the furnace and occasionally does. The Oak Park, Ill., incinerator has three such openings, and thus, three disaster liabilities. Safety belts attached to chains hung from the ceiling never have been entirely satisfactory. They are a constant source of obstruction, and often hamper the men in their work.

To eliminate this difficulty, Edward Shanks, assistant superintendent of streets, has designed a system of safety belts that gives the needed protection. Moreover, the men may move around freely without interference. He installed four 2-inch sleeves, evenly spaced and 8 feet from each furnace opening. A 1½-inch pipe may be easily dropped into each sleeve. From the top of the pipe is a 7-foot length of chain that leads to a leather belt worn by each charging-floor operator. Thus a man is free to rotate around the area of the opening by dropping the pipe into any of the four sleeves. When trucks are not arriving, he can unhook the belt from the chains and remove the pipe from the floor.

RICHARD J. DUNN
Assistant to Director of Public Works
Oak Park, Ill.

Adjustable safety belts provide protection to the men as they unload a Leach Packmaster and charge the furnace.



Someone will get credit for lighting this street. Who will it be?

Pretty soon something's bound to happen on a dark street like this, and when it does, someone will spearhead a drive for good public lighting. He'll get what he's after, too, because who casts a vote for darkness on his community's streets?

And when the lights come on, business picks up, accident rates drop, there's less crime. Streets *look* safe and prosperous—and they *are*.

The cost? Good street lighting is the least expensive capital improvement you could sponsor.

"Out of Darkness" a new, dramatic film story of how one community met its street-lighting problems, is now available to civic groups, community service organizations, etc. This 16-mm, sound, black-and-white movie runs 26 minutes. Borrow a print of "Out of Darkness" from your nearest G-E Apparatus Sales Office.

Section C455-10
Outdoor Lighting Department,
General Electric Company, Schenectady 5, N. Y.

Please send me a free copy of the 16-page bulletin, "Residential Street Lighting," GEA-6316.

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Street _____

City and State _____

Progress Is Our Most Important Product

GENERAL ELECTRIC

Parks & Playgrounds

Edited by JOSEPH PRENDERGAST, Executive Director, National Recreation Association

Paints and Other Surfacing Materials for Park Structures

By R. P. EMERY, *Tacoma Representative**

W. P. Fuller & Co., San Francisco, Calif.

WHEN we think of the youth activities that take place in and on park structures, we can easily understand some of the maintenance problems that confront park personnel. Thus, whether paints or any other surfacing materials are being procured, for the maintenance of such structures, selective judgment in choosing the best product available for the project at hand should be exercised. In this age of extremely high labor costs, the gallon or unit price of material involved is of little consequence. Many times, a higher initial outlay for material will result in lower over-all cost for a given project due to ease of application or installation, coverage or spreading capacity of the product being applied, or even more important, the serviceability and durability of the material involved.

Interior and Exterior Floors

During the past several years a number of changes have been made in the formula of floor finishing products. In the varnish category, clear plastic finishes have been developed and are available in gloss, semi-gloss, or flat grades. They are actually all-purpose interior finishes, since they are recommended for use on floors, woodwork, furniture, etc. They are extra-pale in color, being practically water white as they are supplied in the container. They have exceptional abrasion or scuffing resistance. Being 100% alkyd synthetic, they also have splendid resistance to hot and cold water, alcoholic beverages, as well as soaps and detergents. Finishes of this type are highly recommended wherever you may have need of a durable, clear interior finish in your maintenance program.

Probably the most important recent development in pigmented floor finishes is covered in the field of chemical resistant products. After many years of research, the paint industry has developed a product known as Pliolite. This material is the basic material used in a top quality finish, resistant to corrosive chemicals such as acids, alkali, salt-brine, chlorine gas, oils, gasoline, ammonia, etc. Although developed primarily for the chemical industry, it is suitable for application on all types of surfaces. It is extremely tough and durable, which makes it adaptable for use on floors. Manufactured in a wide range of colors, it may be used on unprimed wood, concrete, or metal. For maximum chemical resistance on metal surfaces, however, a corrosion inhibitive primer should be used. In a sense, a material of this type can be properly classified as an all-purpose finish. This type material might well be tested on the iron pipe used in some bear pens and roofing used on boathouse decks.

Available, also, from most paint concerns are pigmented floor enamels of the quick drying porch, floor, and deck finish variety. These, for the most part, are modified synthetic enamels, capable of producing a fairly tough, glossy finish. They are intended for use on either wood or concrete floors, either interior or exterior.

Concrete floors resting directly on the ground cannot, as a general rule, be satisfactorily finished with any kind of film forming paint or varnish product. The finishing of such cement surfaces has presented the paint industry with many headaches that have resulted from alleged paint failures.

Exterior Surfacing Materials

A couple of decades ago, thoughts of painting cedar shingles were directed to the mixture of linseed oil, graphite, oxide red, or other dry pigment, supplemented with a small amount of turpentine and drier.

Today, first quality exterior paints for wood structures are usually considered by most manufacturers as being properly balanced pigment combinations of lead, titanox, and zinc. The vehicle usually contains a properly balanced combination of processed linseed oil, tung, or some other water repellent oil, driers, and thinner. Combinations of both pigment and vehicle are likely to vary somewhat, depending on the individual manufacturer's laboratory and actual field experience. Similarly, the price range in which a given product is to be sold will vary.

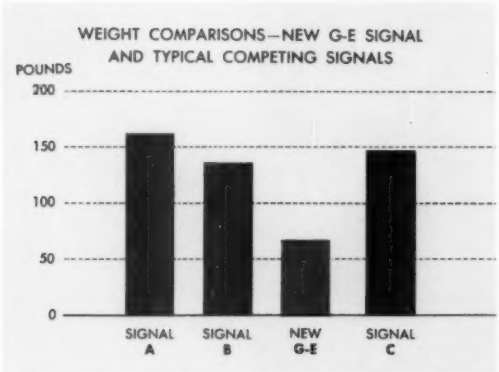
Most manufacturers now are also producing a controlled penetration primer, which is recommended for use as a prime coat on unpainted wood. Extensive testing has proved that the use of this product, followed by one or two coats of first quality exterior paint, produces a better, more durable paint surface, than could be obtained with the same number of coats following the painting procedure of years past, wherein it was considered most essential to gain depth of penetration with the first coat used on unpainted wood.

Worth mention at this point is the fact that many tests are now being conducted with synthetic alkyd resin finishes on exterior wood structures. One company also has numerous exposure tests with a super latex rubber paint especially produced for use on exterior wood. These application tests have been conducted over the past four years on structures throughout 11 western states. Although a completely conclusive opinion has yet to be formed, some astonishing results have been attained. This could well mean that we are on the threshold of another revolutionary change in finishing procedure for exterior wood. Personally, I would not be surprised if within the coming year or two, we would find latex rubber finishes in general use for finishing exterior surfaces on wooden structures.

* From an address given at the Park Recreation Training Institute, sponsored by the International Northwest Parks Association, Tacoma, Wash., November 3-4, 1955.

G.E.'s new aluminum Signal

Lightest by far, but still the most rugged. Fast and economical to install, too!



COMPARISON SHOWS that the new G-E aluminum signal is less than half the weight of its lightest competitor. Chart based on comparison of 3-color, 4-way, adjustable span-wire suspended signals.

Actually 45% lighter than existing models—and a major step forward in simplified, functional design! Here's one of the greatest advances in traffic control equipment that the industry has seen for years—the all-new General Electric lightweight traffic signal!

LIGHT WEIGHT means quicker, safer, easier installation on busy intersections—saves money, too, since there is less need for heavy, costly poles and span wires. Design provides for minimum use of tools—sections may be added or removed easily, rotated 90 or 180 degrees and locked in place with only one bolt. Snap-on door and lens assemblies simplify and lessen your maintenance problems.

FOR FULL INFORMATION on these new signals, contact your authorized G-E traffic distributor or Apparatus Sales Office, or write Section 453-68, General Electric Company, Schenectady 5, N. Y.

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Our Municipal Notebook

Administration's 1956 Program Promises New Aids for Localities

A FLOOD insurance program, assistance to economically depressed cities, new aids for local civil defense, and more federal funds for urban planning were among the proposals made by President Eisenhower at the opening of the second session of the 84th Congress. Within hours after the President's State of the Union Message was delivered, an Administration bill for a $3 billion experimental flood insurance program was introduced in both the House and the Senate. The bill would require the federal and state governments each to pay 20% of the costs of premiums for the special disaster insurance. Private individuals would pay the remaining 60%. The bill calls on the Housing and Home Finance Agency to administer the program and to issue the proposed insurance through a new division to be called the Federal Flood Indemnity Administration.

Depressed Communities

In speaking of an assistance program for economically depressed communities, the President noted that the speed of the country's technological and economic advance had left some areas deprived of former markets and opportunities. To help such areas adapt themselves to today's conditions, the President informed the law makers that he would later propose a program of federal technical and financial assistance.

Conservation of the nation's water resources for industrial as well as domestic uses, also received the President's attention. He recognized the federal government's primary responsibility for the construction of large scale projects but recommended federal assistance to cities that wish to undertake smaller projects.

Other aids for localities proposed by the President were a federal assistance program for school construction, and a housing program calling for 35,000 units of new public low income housing during each of the next two years.

In further discussing housing, the President said, "To meet the needs of the growing number of older people, several amendments to the National Housing Act will be proposed to assist the private homebuilding industry as well as charitable and nonprofit organizations." Other housing aids proposed were new liberalizing features for the Title I program for the modernization and improvement of existing homes in areas threatened with blight.

Norfolk's City Manager Dies

THE city manager profession has lost one of its outstanding members in the death, on December 19, of Sherwood Reeder, City Manager of Norfolk, Va., since July 18, 1955.

Mr. Reeder was born in Williamsport, Pa., in 1905 and educated at The Pennsylvania State University and Syracuse University, taking his M.S. in public administration at the latter.

Prior to serving as city manager of Norfolk, he had held such posts as village manager of Greendale, Wis.; director of the Metropolitan Master Plan, City Planning Commission, Cincinnati; city manager of Richmond, Va.; and president of the Pennsylvania Economy League, Inc. in Harrisburg.

The loss to the city of Norfolk is especially great as Mr. Reeder was just beginning to establish his programs.

Mr. S. C. Morrisette, director of public works, is now acting city manager of Norfolk.

New Policy Denies Water To Badly Zoned Denver Fringes

THE Denver water board recently adopted a new policy that denies water services to new residential developments that are outside the city limits and that do not conform to Denver's general zoning classifications. The move is designed to avoid semislum and blighted developments at the edge of the city. Because the growth of areas immediately surrounding Denver is largely dependent on extensions of the city water system, the refusal of water has been found to be one of the most effective ways of forcing suburban developments to conform to Denver standards.

1955 a Banner Year For Manager Plan

MORE CITIES adopted the manager plan of municipal government during 1955 than during any previous year. In revealing recently that 92 cities and towns had joined the ranks of localities operating under the plan, the International City Managers' Association announced that as of December 31, 1955, the national total of manager communities stood at 1,362.

In analyzing the rapid growth of manager government during the past year, the National Municipal League in New York City has found that

REPRESENTATIVE MUNICIPAL BOND ISSUES

December 30, 1955 to January 11, 1956

Date of Issue			*Purpose*	*Average Maturity (Years)*	*Nic Interest Cost Per Cent*
1/ 3/56	Banning Sch. Dist., Cal.	$ 110,000	School building	11½	3.237
1/ 5/56	Thompson, N. Y.	25,000	Town road	2⅝	2.81
1/ 5/56	Ruggles Tp., Ohio	10,000	Fire station and equipment	6½	3.47
1/ 5/56	Troy Tp., Ohio	10,000	Fire station and equipment	6½	3.38
1/ 7/56	North Olmsted, Ohio	140,000	Fire house	11¼	3.49
1/ 9/56	Portland, Ore.	500,000	Port — Series "U"	10½	2.294
1/10/56	Sheffield Lake, Ohio	35,000	Real Estate purchase	5	3.48
1/10/56	Wolcott, N. Y.	50,000	Water	13	3.163
1/10/56	Marshall Co., Ind.	650,000	Hospital	8⅝	2.299
1/10/56	LaVerne City Sch. Dist., Cal.	101,000	Building school	10⅛	3.17
1/10/56	Excelsior Jr. College Dist., Cal.	1,500,000	Building	10½	3.08
1/11/56	Williamson, N. Y.	768,000	Water	16½	2.788

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The name "CLOW" cast on the face of cast iron pipe is your guarantee of high quality. This distinctive "autograph" marks the precise, modern production methods and the advanced, exacting control of metallurgical quality employed by Clow to assure you the finest cast iron pipe.

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the manager plan is now the most popular form of local government in all cities having 25,000 or more residents. With adoptions in the past few months in Brockton, Mass., and Zanesville, Ohio, 205 cities in the 25,000 or more category use the manager plan, 203 have retained the mayor council form, and only 93 now operate under the commission plan.

Last year's 92 adoptions indicates that the bigger the list of council manager cities, the faster the number grows.

RICHARD S. CHILDS
Chairman, Executive Committee
National Municipal League

1957 Census of Governments Advocated

CONGRESS has been urged by various organizations of public officials to appropriate funds for a 1957 census of governments. Like the last such census, made in 1942, this would collect information about public expenditures, debt, employment, taxes, and tax valuations in state and local government.

In making the request, the American Municipal Association, Municipal Finance Officers Association, National Association of Assessing Officers, National Association of Tax Administrators, and International City Managers' Association stated that information of this type is very valuable to local officials and government advisory services in planning and evaluating government operations.

New County Park System Under Way

DECLARING that a county park system can help reduce weekend traffic problems and protect limited water resources besides providing attractive recreation areas, officials in Morris County, N. J., have announced the establishment of a Morris County Park Commission. The appointment of the new five-member body adds Morris County to the ranks of seven sister New Jersey counties having active park agencies.

With responsibilities to acquire, develop, maintain, and operate a park system, the new commission is starting its work with studies that show needs for extensive county park areas in the immediate and long-range future. Prepared by the Morris County Planning Board, the studies show that 3,650 acres of developed county parks will be required by 1960 and more than double that amount by the year 2000.

In establishing the park body, the county's Board of Chosen Freeholders (county legislators) stated, "It is most essential that county parks be located wherever possible to protect the sustained yield of the county's rich, but not unlimited, ground water sources." The Board also noted that the parks could be a means of reducing weekend traffic problems since they could provide family recreation space near homes and town centers. Finally the Board stated its belief that the county parks should be limited to the use of county residents and their guests. The establishment of park systems to solve metropolitan-wide recreation needs, the Board said, should be a function of state government.

New City Calendar Is Also Municipal Report

THE City of Richmond, Calif., introduced a new concept in the field of municipal reporting. In December, the city released its "Family Reminder," which is a combination calendar and municipal report.

The calendar-report is 6 inches by 9 inches in size and is arranged by weekly pages that may be torn off and saved, if desired, or folded back. There are 54 weekly pages in total, as the calendar starts with Christmas of 1955. In this way, this calendar-report also serves as a Christmas message from the City Council.

On each page of the calendar-report are the following: (1) the emergency police, fire, ambulance, and civil defense numbers; (2) three of the most important public meetings; (3) space opposite each day in the week to accommodate the writing in of family affairs and within each space civic and religious reminders as may fall in certain days in the week; and (4) along the bottom of each page, a different community service is featured and explained.

A previous 33-page, 6-inch by 9-inch annual report, issued by the city of Richmond was typical of that issued by other cities. It cost the city 26 cents per copy on a quantity run of 17,000. This new, year-round, 54-page calendar-brochure will cost the city 34 cents per copy.

Aid for Graduate Studies Announced

THREE universities have announced the availability of financial aids for graduate study during 1956 and 1957 in city and regional planning, landscape architecture, and flexible pavement technology. The three institutions are Cornell and Purdue Universities and the University of Illinois.

Applications for fellowships in city planning and landscape architecture at Illinois should be addressed to the Dean of the Graduate College, University of Illinois, Urbana, Ill., before February 15, 1956, and applications for assistantships should be made before April 15.

Information on the scholarships, fellowships, and assistantships in planning, architecture, and landscape architecture offered by Corneli may be obtained from the Department of City and Regional Planning, Cornell University, Ithaca, N. Y. Applications will be received until February 17.

Purdue has announced that 22 grant-in-aid fellowships will be available for the summer session of 1956. These will interest persons engaged in research and instructional work in highways, airports, materials testing, and asphalt technology. Requests for information should be addressed to Professor K. B. Woods, Head, School of Civil Engineering, Purdue University, Lafayette, Ind.

THE LINE THAT HELD

At Waterbury, Conn., this Lock Joint Reinforced Concrete Cylinder Pipeline, undermined by flood waters, gave trouble-free service, alleviating a critical water shortage.

Although sections of this 48" Lock Joint water supply line for Hartford, Conn. were uncovered by the flood, it continued to give satisfactory service.

The destiny of England once hung on Wellington's "thin, red line" at the Battle of Waterloo. Daily your community's safety from fire and epidemic depends, to a large degree, on its water supply and sewage lines.

When the backwash of Hurricane Diane inundated western New England, the many Lock Joint installations in the area stood firm. These lines, in some cases the main source of water supply or of sanitary sewage disposal, continued to give trouble-free service even when uncovered and undercut by raging flood waters.

Such rugged pipe deserves your consideration. Its strength is evident, its initial high carrying capacity is permanent, and its useful life is exceptionally long.

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Pressure • Water • Sewer • REINFORCED CONCRETE PIPE • Culvert • Subaqueous

Citizen Participation Techniques to Be Studied

SMALL communities planning urban renewal will be interested in a study on enlisting citizen participation in such work, to be conducted in Dyersburg, Tenn. (pop. 11,000).

Urban Renewal Commissioner J. W. Follin has approved a "demonstration" grant of $13,066 to the Tennessee State Planning Commission as the federal government's two-thirds share of the cost of the investigation. Results of the study will be published in a comprehensive report.

The use of public meetings, displays, and other educational materials are among the techniques to be tested, as are methods and standards for selecting urban renewal areas and the criteria by which to judge the level of residential living to which various neighborhoods should be raised.

Hospital Zone Drawn For Tennessee City

A SEPARATE HOSPITAL or medical district has been established within the city limits by an amendment to the Dyersburg, Tenn., zoning ordinance. The district, which surrounds a new hospital now under construction in an undeveloped portion of the city, will permit the construction of residences and hospitals, as well as offices, clinics, and laboratories related to the practice of medicine and dentistry. Pharmacies are also permitted, but outside signs are restricted to no more than 4 square feet in area.

The new district has been drawn to permit the development of a variety of medical facilities in what will eventually be a primarily residential area. It was passed to prevent a repetition of the conditions surrounding an older hospital in Dyersburg, which has a population of 11,000.

The older hospital is located on a main highway in the heart of the business district. A filling station lies directly across the street, and three others are within a stone's throw. In the past, noise from the heavy traffic and the service stations has been annoying to the patients.

The section, which lists the medical uses that are permitted within the new zone, reads as follows:

> **Hospitals for human care, offices or clinics for medical or dental practice, clinical laboratories and public health administrative offices and clinical facilities. Within each hospital, clinic or office building, the sale of foods, beverages, periodicals and tobacco will be permitted for the convenience of employees, patients, and visitors** provided, **that any advertising of such sales shall be confined to the interior of the building and shall not be visible from the outside of such building. Further, direct access to any room or enclosure set aside for the sale of such goods shall be from the interior of the building only.**

PAGE U. HART, *Mayor*
Dyersburg, Tenn.

Court Bans Municipal Aid to Industry

THE New Mexico Supreme Court has declared unconstitutional a state law that had allowed communities to issue revenue bonds to acquire industrial properties for leasing to private interests.

Under the state law, the Village of Deming had passed an ordinance issuing $15 million in bonds to buy the plant and facilities of a local munitions firm and lease it back. When tested in a friendly suit, a lower court upheld the law but the Supreme Court ruled that it violated a constitutional ban against aiding one business when not all private enterprises were accorded the same benefits.

Perth Amboy Signs First Housing Contract Under 1955 Amendments

TWO HUNDRED low-rent homes to be built under a financial aid contract will make Perth Amboy, N. J., the first community in the United States to sign a public housing contract under the housing Amendments of 1955. Under the terms of the 1955 amendments, the Public Housing Administration was authorized to enter into loan contracts on or before July 31, 1956, covering 45,000 low-rent dwellings.

Administrator Albert M. Cole of the Housing and Home Finance Agency, who approved execution of the loan contract, has stated that Perth Amboy has a well-rounded program for ridding the city of slums and providing housing for the families removed from them. The Perth Amboy housing authority now operates two low-rent public housing projects, and the additional 200 units will bring the total of low-rent homes there to 710.

Examination and Interview for Building Inspector Job

IN THE search for a new building and plumbing inspector for the Borough of Whitehall, Pa., it was decided that, since much of the inspector's work involves contact with the public, applicants should be tested not only for technical knowledge but also for personal characteristics.

Job advertisements were placed in Pittsburgh and neighborhood newspapers, specifying job qualifications, salary, and the fact that a qualifying examination would be given for the job. In consultation with the Institute of Local Government of the University of Pittsburgh, two professors of psychology were selected to prepare and give the examination. Eleven applicants appeared to take the following test:

1. **An intelligence test;**
2. **A test of mechanical insight;**
3. **A social intelligence test designed to determine the applicant's ability to meet the public and handle public matters;**
4. **A test to determine the applicant's ability to interpret blueprints and mechanical drawings; and**
5. **A test of knowledge, judgment, and character prepared at the Borough office. This tested not only the applicant's knowledge of building and plumbing matters, but also the applicant's judgment of and attitude toward on-the-job situations. The latter was achieved by asking the applicant to list in order of preference alternate solutions to problems which he might meet.**

The four highest were then given interviews and rated on the basis of personal appearance, attitude, ability to express ideas, and judgment.

The successful candidate, A. C. Mueller, replaces former inspector Elmer A. Fedak, who had resigned to move to Florida.

ROBERT H. MCGREGOR
Borough Manager, Whitehall, Pa.

California Highway Police Really Move Fast!

100 NEW '56 DODGE PATROL CARS NOW PATROL THE GOLDEN STATE'S HIGHWAYS

Quick pick-up, top speed, stability and durability have convinced California's Law Enforcement Officials that the new '56 Dodge "230" Patrol Car definitely meets their needs.

These "stand-out" Dodge virtues were clearly demonstrated by a recent stock car speed and endurance test made on Utah's famous Bonneville Salt Flats. The panel at right summarizes the results of this official AAA-supervised performance.

With the new Super-Powered Super Red Ram 230-horsepower V-8 engine at your command, the rapid acceleration so clearly demonstrated by the "standing start" and "flying start" tests assures lightning-like response when needed. Teamed with Dodge Center Plane brakes for severe stops without fade and greatly reduced pedal effort, the most important requirements of a dependable law enforcement vehicle have been outstandingly achieved.

Dodge also offers many impressive safety features and a host of special options that soon pay for themselves in low maintenance costs. Your nearby Dodge dealer will gladly tell you about 4 new Dodge body styles ideal for police service. Talk it over with him first chance you get.

NEW DODGE SHATTERED 306 OFFICIAL RECORDS IN 14-DAY, NON-STOP ENDURANCE TEST

The dynamic new '56 Dodge that established these sensational records was a regular 4-door sedan selected at random right off the production line. Here's how the records fell in a recent officially observed, impartially judged test.

- All-time AAA record of 92.86 mph for 14-day non-stop run.
- Every AAA American and International performance and endurance record for American closed cars up to 31,224 miles.
- 27 World's Unlimited Records, open to all foreign, sports and racing cars.
- Every International Class B record from 4,000 through 31,224 miles.
- Total of 306 records in all.
- New AAA record of 114.05 mph for the flying-start mile.
- New AAA record of 79.55 mph for the standing-start mile.

We'll waive further hearing once you've seen and driven this '56 Dodge.

New '56 DODGE *"230" Patrol Car*

Informative Catalogs - Yours For The Asking!

To obtain any of the following catalogs, write directly to the manufacturers or use the Post Card on the insert following Page 52

New Patrol Car Aids Law Enforcement

232 The most important requirements of a dependable law enforcement vehicle have been combined in the new '56 Dodge "230" patrol car. This efficient vehicle features a 230-hp V-8 engine for fast starts, and new Dodge Center Plane brakes for severe stops without fade. Four new Dodge body styles are available for police service. Write DODGE DIV., CHRYSLER CORP., 21500 MOUND RD., DETROIT, MICH.

Elm Trees Decorate Parks and Boulevards

233 Increase the attractiveness of your community by lining streets and boulevards with Augustine Ascending Elm trees. These columnar trees grow rapidly, survive severe storms, and will not disturb turf. They are guaranteed to resist elm plagues, and will not obstruct traffic. For further details, write AUGUSTINE ASCENDING ELM RESEARCH ASSOCIATION, 932 E. 50th ST., CHICAGO 15, ILL.

Tractor-Shovels

234 Where heavy-duty excavation and grading are required and manpower is at a premium, you can count on good performance by putting a Michigan tractor-shovel to work. The big units have all the rugged power of a crawler tractor, yet, operate on rubber tires. The rubber creates no damage to city streets, and permits the units to be moved quickly from place to place. Write CLARK EQUIPMENT CO., CONSTRUCTION MACHINERY DIV., 2495 PIPESTONE RD., BENTON HARBOR 7, MICH.

Economical Washroom Facilities

235 Installed in public washrooms, economical Bradley Washfountains provide more facilities in less space, reduce water consumption, and cut piping installation costs. The 54-inch wall-type fountain provides a clean spray of water for up to six persons at the same time. The large, full-circle model serves up to 10 persons. For *Catalog 5601*, write BRADLEY WASHFOUNTAIN CO., 2333 W. MICHIGAN ST., MILWAUKEE 1, WIS.

Lays Pipe Underground

236 You don't have to disrupt traffic to lay water and gas mains underground. A Prewitt horizontal digger will drill under highways and sidewalks for low-cost, high-speed pipe installation. The digger drills up to 48 feet in all types of soil. It is quickly mounted on skids for easy maneuverability, and requires minimum operating space. Write J. R. PREWITT AND SONS, PLEASANT HILL, MO.

Joint Filler

237 Flexcell, a dependable bituminous fibre expansion joint filler, may be used between slabs of concrete in airport runways, highways, floors and other large areas where normal expansion and contraction must be compensated. It is easily handled in all temperatures, and is available in ¼-, ⅜-, ½-, ¾- and 1-inch thicknesses. For further details, write THE CELOTEX CORP., 120 S. LaSALLE ST., CHICAGO 3, ILL.

Pipeline Equipment

238 *Catalog 26* describes and illustrates a full line of pipeline equipment, including diaphragm pumps, melting furnaces, joint runners and calking tools. It also discusses manhole cushions, pipe cutters, and the efficient M-Scope pipe finder. For your copy, write JOSEPH G. POLLARD CO., INC., NEW HYDE PARK, N. Y.

Easy-to-Operate Motor Graders

239 All you do to operate the new T-500 and T-600 Grade-O-Matic motor graders is to move the fingertip hydraulic control levers. Automatic power will do the rest. The graders are designed with a torque converter drive and new powershift transmission. The T-500 offers 125-hp and weighs 25,000 pounds. The T-600 offers 140-hp and weighs 30,785 pounds. Weights include scarifier. Write THE GALION IRON WORKS & MFG. CO., DEPT. A-26, GALION, OHIO.

Concrete Water Pipe

240 The long life, great strength, and sustained high carrying capacity of Price prestressed concrete cylinder pipe, make it ideal for use in municipal water distribution lines. For details and specifications, write PRICE BROTHERS CO., DAYTON 1, OHIO.

Street-Name Signs of Porcelain Enamel

241 To provide your city with the best in street-name signs, specify Ferro signs, constructed of "permanent" porcelain enamel fused on quality steel. These signs are clearly visible day or night. They are available from FERRO ENAMELING CO., 1100 57th AVE., OAKLAND 21, CALIF.

Every Sewage Plant Needs One

242 Don't waste sewage sludge. A Royer Shredder will chop up the sludge so that it is easily used as a fertilizer, and for mixing soil and old sod for park department use. The versatile shredder is available in both portable and stationary models. It provides high capacity production wherever materials are to be shredded, mixed, aerated or reduced in particle size. Write ROYER FOUNDRY & MACHINE CO., 179 PRINGLE ST., KINGSTON, PA.

Choosing A Dependable Water Meter

243 Qualities to look for when choosing water meters for your community, are discussed in literature from the ROCKWELL MFG. CO., PITTSBURGH 8, PA. Rockwell meters are designed for top performance, greater accuracy, and longer life. They reduce maintenance and repair costs, and increase water revenues.

Cleans Parking Meters

244 Clean, rinse, polish and dry your city's meters with Instro-Met, the only cleaning machine designed specifically for parking meters. Instro-Met is furnished with two gallons of cleaning solution and three gallons of rinsing solution. Get full details from the ZENITH MFG. & CHEMICAL CORP., 82 BEEKMAN ST., NEW YORK 38, N. Y.

Reflectorize Your Own Traffic Signs

245 An increasing number of communities are improving their traffic signs with this "do it yourself" sign maintenance package. The system enables you to reflectorize painted signs and refurbish old signs with "Scotchlite" Sheeting. It includes a heat lamp vacuum applicator, and a variety of plain and reflectorized sign blanks and faces. Write MINNESOTA MINING & MFG. CO., DEPT. AB-115, ST. PAUL 6, MINN.

Easy-to-Install Pipe for Culverts & Sewers

246 Lo-Hed reinforced concrete pipe is easy to lay, grade and line, and features smooth walls and tight joints for maximum hydraulic capacity. The elliptical design of Lo-Hed enables the pipe to carry a greater flow—in a minimum depth of cut with increased depth of cover. A complete range of sizes is available for nearly all culvert and drainage installations. Write AMERICAN-MARIETTA CO., CONCRETE PRODUCTS DIV., 101 E. ONTARIO ST., CHICAGO 11, ILL.

A Brush Chipper

247 The Fitchburg Chipper will clean up brush and branches, transforming these bulky objects into easy-to-handle chips. The unit also can handle such difficult jobs as disposing of banana stalks and troublesome Christmas trees. The chipper is easily stored, and economical to operate. It is described in a new *Chipper Booklet* from FITCHBURG ENGINEERING CORP., DEPT. AC-16, FITCHBURG, MASS.

Portable Water Coolers

248 Keep Water Boy portable water coolers handy on every type of municipal construction and maintenance job. These coolers supply workmen with pure, cool drinking water. They are designed with double-locked seams and bottoms, recessed faucets, and fully enclosed or open-rimmed covers. A new Sparkleen liner keeps water clean and free of all taste and odor. Write SCHLUETER MFG. CO., ST. LOUIS 7, MO.

Portable Power Plants

249 With this economical, portable electric plant, Model 1.5M25, you can operate grass shears, hedge trimmers, chain saws, drills, electric spades, pipe threaders and cutters. Other models, ranging from 500 watts to 35KW, are available for trucks, street repairs, police and fire departments, and civil defense units. For *Folder T-8*, write KOHLER CO., KOHLER, WIS.

Street Lighting with Aluminum Standards

250 Painting and other maintenance costs disappear when you install Hapco street-lighting standards in your community. These sturdy poles are spun from aluminum alloy, heat treated for maximum strength. They are built to withstand all weather and climate conditions, and offer high resistance to corrosive atmospheres. For the new *Hapco Catalog*, write HUBBARD ALUMINUM PRODUCTS CO., PITTSBURGH 1, PA.

(Please turn to page 28 for more Bulletins)

RADAR controlled and guided, high speed rockets streaking through the stratosphere may deliver New York mail to San Francisco in less than an hour!

100 years from now...

WE MAY SEND MAIL BY ROCKET!

A century from now a wonderful, exciting and different world. But there will be one familiar note. The cast iron pipe laid today will still be carrying water and gas to the homes and industries of tomorrow.

In over 60 American cities, these dependable cast iron water and gas mains, laid more than a century ago, are still serving efficiently. And modernized cast iron pipe, centrifugally cast, is even stronger, tougher, more durable.

U. S. Pipe is proud to be one of the leaders in a forward-looking industry whose service to the world is measured in centuries.

U.S.
cast iron
PIPE
FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE
CAST IRON

U. S. PIPE AND FOUNDRY COMPANY, General Office: Birmingham 2, Alabama

A WHOLLY INTEGRATED PRODUCER FROM MINES AND BLAST FURNACES TO FINISHED PIPE.

To enforce this...

you need CYCLONE FENCE!

Efficient sewage disposal is one of the most important functions of any municipality. And this requires good equipment . . . including good fence. When Cyclone Fence is installed around sewage works or other vital city projects, it keeps trespassers and vandals safely outside, guards valuable equipment from theft and damage.

You can buy cheaper fence than Cyclone, but it may *cost you more per year*. Cyclone gives full value for your dollar. Nothing but brand-new, top-quality material is used throughout. Posts and top rails are heavy and rigid. Gates won't drag. The chain link fabric is woven from heavy steel wire and galvanized *after* weaving for greatest resistance to rust and corrosion. And Cyclone is erected by full-time, Cyclone-trained experts.

Our engineers, located in principal cities, will gladly supply you with data and advice on the proper type of fence for the particular project under consideration.

NO JOB IS TOO LARGE—NO JOB IS TOO SMALL FOR CYCLONE*

CYCLONE FENCE DEPARTMENT, AMERICAN STEEL & WIRE DIVISION
UNITED STATES STEEL CORPORATION
WAUKEGAN, ILLINOIS · SALES OFFICES COAST TO COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

*Cyclone is the trade-mark name of fence made only by Cyclone. Accept no substitute.

USS CYCLONE FENCE

UNITED STATES STEEL

Catalogs for You

Write directly to the manufacturers or use Post Card at P. 52

Provides Drinking Water on the Job

251 Keep your work crews supplied with clear, cool drinking water with Igloo water coolers made by the BETTIS CORP., P. O. DRAWER 9365, HOUSTON 11, TEX. The coolers, made of corrugated steel, won't rust or leak, and are completely sanitary. They are available in various capacities ranging from 2 to 15 gallons. Write for literature.

Need an Indoor-Outdoor Swimming Pool?

252 Municipal swimming pools that provide more space at less cost, a combination indoor-outdoor pool, and a new indoor-outdoor one unit pool, are the exclusive designs of Wesley Bintz, consulting engineer. Mr. Bintz has prepared a new 90-page pamphlet covering a variety of economical pools. Copies are available from WESLEY BINTZ, 301 S. WASHINGTON AVE., LANSING 25, MICH.

New Riding Unit Mows and Tills

253 Whether you're using the Midland Rider to mow or to till, this efficient machine will do the job quickly and easily, with maximum operator comfort. Combined with gang mowers, the Rider will cut a 60-inch swath. With tiller, it mulches a 22-inch swath. Other attachments are available for weed cutting, snow plowing and bulldozing. Write THE MIDLAND CO., S. MILWAUKEE 16, WIS.

Generators for Police Cars and Fire Trucks

254 Police cars, fire engines, public utility trucks and other vehicles using 2-way radios, floodlights and special electrical units, can now be equipped with Delco-Remy's new 6- and 12-volt A.C.-D.C. charging systems. The high wattage output of these generators is ample for the heaviest electrical loads. Application packages, complete with installation instruction sheets, may be obtained from DELCO-REMY, DIV. OF GENERAL MOTORS, ANDERSON, IND.

Equipment for Every Traffic Requirement

255 In addition to a variety of plain and reflectorized street-name signs, Sargent-Sowell offers traffic signals, street marking stencils and buttons, traffic cones, traffic paint, and a number of sturdy line-marking machines. Also a large selection of equipment for municipal police departments. All are described in a new, 50-page catalog from SARGENT-SOWELL, P. O. BOX 1176, GRAND PRAIRIE, TEX.

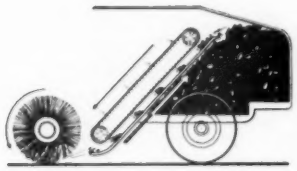
Swing-Top Receptacles Keep Streets Clean

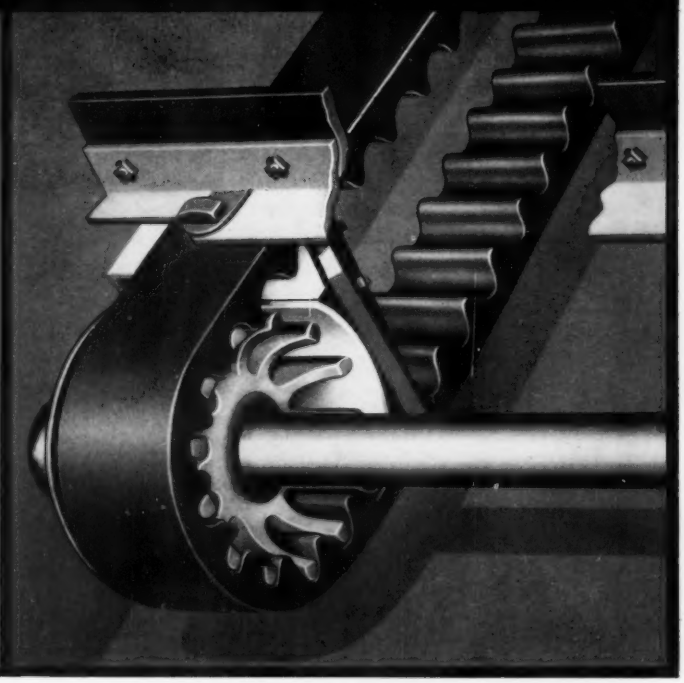
256 In New York City alone, more than 2,000 United swing-top waste receptacles line famous Fifth Ave., four-to-a-corner, and the New York Board of Education is estimated to have put thousands of additional units to work throughout the city. Full details on these sanitary metal containers may be obtained from the UNITED METAL CABINET CORP., 168 SEVENTH ST., BROOKLYN 15, N. Y.

(See p. 34 for more Bulletins)

NOW! GUARANTEED 6,000 MILES!

RUBBER DRIVE CHAINS FOR DIRT ELEVATOR ON WAYNE SWEEPERS!





ONLY WAYNE DARES MAKE THIS OFFER!

Never before a guarantee like this for any part of dirt lifting mechanism on a street sweeper. Only Wayne dares make it, because only Wayne has rubber drive chains that outwear steel. And only Wayne is designed to handle uncontrolled quantities of debris.

Built around a core of high alloy steel woven cables, these tough rubber drive chains withstand the abrasive wear of sand and dirt. Nothing compares in strength, stamina and backbone needed for long, uninterrupted service. *This has been proved in 6,000,000 miles of sweeping!* Downtime for repair or replacement is reduced to a minimum. Sweeping time reaches a high not equalled in any other sweeper. So when you order *your* next sweeper, specify rubber drive chains.

Write for descriptive literature

WAYNE

WAYNE MANUFACTURING CO.

1220 E. Lexington St., Pomona, Calif.
472 Highway 1, Newark, N.J.

World's Largest Manufacturer of Sweepers for Cities and Industry

IT KEEPS YOU
but for a

MODERNIZED **cast iron**

AWAKE, TOO... different reason

To the householder, a dripping faucet is only an annoyance . . .

To you it's waste that can be eliminated only by an educated and alert public, willing to cooperate in your efforts at conservation.

Here, we can . . . and will continue to . . . help.

Our national advertising campaign, reaching millions, stresses conservation and the need of long-range, advance planning for adequate water facilities. It urges realistic water rates and support for the forward-looking legislation and bond issues that will insure a plentiful supply for the future.

It's designed to help America . . . and you . . . conserve our most precious national resource . . . keep water flowing freely and abundantly for all.

CAST IRON . . . the pipe that's bought on proof, not claims

No other pipe can point to so convincing a record of long life.

Over 70 public utilities are served by cast iron mains laid over a century ago. This demonstrated record of long life not only gives the public the dependability it has a right to expect in a water system . . . it saves tax dollars as well. Once in the ground, cast iron serves for generations with minimum maintenance. Cast iron's long term economy pays off!

Today, water officials can rely on even better cast iron pipe. Modernized cast iron pipe, centrifugally cast, is tougher, stronger, more uniform. And where needed and specified it is cement-lined to assure sustained carrying capacity throughout its long service.

You specify wisely and well when you specify cast iron pipe for your water system. The experience of over 100 years proves you chose the best.

Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 122 So. Michigan Ave., Chicago 3, Illinois.

Laid 120 years ago this cast iron water main continues to serve the taxpayers of Lancaster, Pa. Photo shows section of a line about 1½ miles long, laid in 1836, and still a part of the Lancaster water distribution system.

CAST Q IRON

The Q-Check stencilled on pipe is the Registered Service Mark of the Cast Iron Pipe Research Association.

pipe FOR MODERN WATER WORKS

The all new "QUICK-WAY"®

CONSTANT POWER in the palm of your hand!

with MORE Big Shovel Features

ANTI-FRICTION BEARINGS—Self-aligning anti-friction bearings on all high-speed continuous rotating shafts and drums. Special bronze bearings on swing rollers and center rotating sleeve.

BULL GEAR, HOOK ROLLERS and MACHINERY FRAME—Heavy, fully machined, hardened steel rollers and roller path. Large sturdy cast steel and electrically welded machinery frame.

ALL CHAIN and SPROCKET DRIVE—Machine-cut steel and cast iron sprockets with compact, high speed, heavy duty roller chains. Oil and dust tight cases.

POWER UP AND DOWN BOOM STANDARD ON ALL MODELS

MAIN ASSEMBLIES—High tensile steel shafting. Any one main assembly removable without tearing down others. Positive control shaft centers for 100% clutch and brake action.

AIR COOLED DRUMS—Large size, louver ventilated, ductile iron clutch and brake drums, finned-ventilated swing assembly drums designed for cool continuous running.

CLUTCH CONTROLS and HYDRAULIC SYSTEM—Smooth, positive minimum effort control from new hydraulic system. New design control lever locks.

ADVANCE DESIGN LUBRICATION—Daily grease fittings centrally located in cab panel. Intermittent grease fittings easily accessible. Positive grease and dirt seals at all revolving points. Forced-feed, filtered circulating lubrication on all chain and sprocket drives and on main shaft bearings. Main bearings also running in oil.

COMFORTABLE FULL VISION CAB—All operating controls, including instrument panel and lock throttle, conveniently located in front of operator. Safety glass windows on all sides and top insure full vision. Sliding and hinged windows provide maximum ventilation.

HINGED PANELS FOR EASY MAINTENANCE—Hinged fold out panels all around for quick, easy maintenance and adjustment.

With the Famous Money-Making Line of "QUICK-WAY" ATTACHMENTS

The Most Advanced and Complete Line in the Small Shovel Field

PRECISION BUILT, RUGGED, FULLY CONVERTIBLE... The new "*QUICK-WAY*" models, designed to heavy-duty specifications ... with more big shovel features than any other in the small shovel field ... have perfect BUILT-IN balance that guarantees precision control, greater lifting power, longer life and more work per horsepower. Write today for complete information, or see your "*QUICK-WAY*" distributor for a FREE demonstration.

"QUICK-WAY"—50	"QUICK-WAY"—80	"QUICK-WAY"—100	"QUICK-WAY"—125
¼ Yd. 5 Ton	⅜ Yd. 8 Ton	½ Yd. 10 Ton	½ Yd. 12½ Ton

AND FIVE NEW "QUICK-WAY" CARRIERS

"QUICK-WAY" TRUCK SHOVEL CO. DENVER, COLO. A Penn-Texas Subsidiary

Mail Coupon Today!

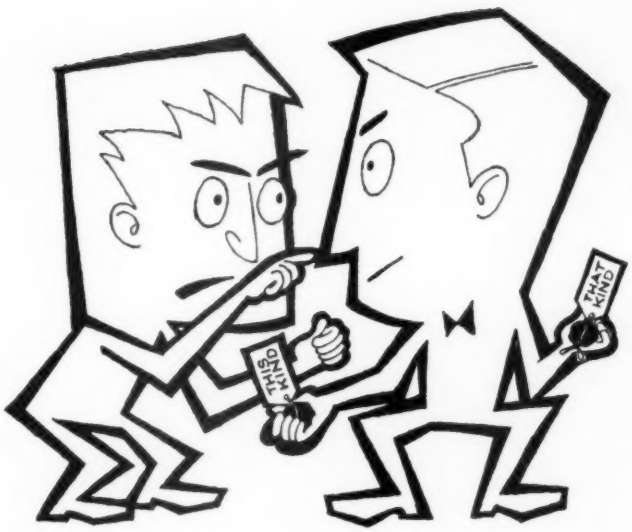
"QUICK-WAY" TRUCK SHOVEL CO.
Dept. 266 —2401 East 40th Ave.
Denver 5, Colorado, U.S.A.

Send complete information on the new "Quick-Way" Models and Carriers. Check model numbers interested in 50( ), 80( ), 100( ), 125( ).

Name_____

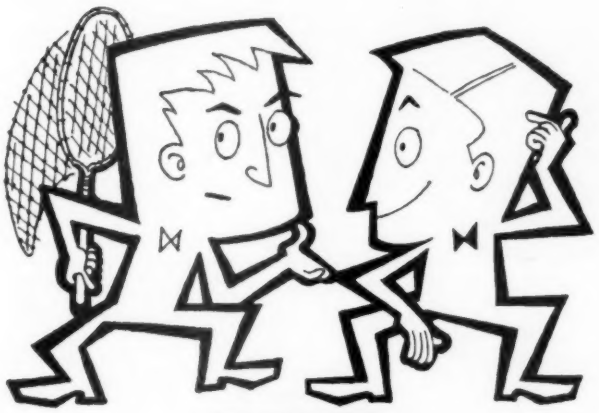
Address_____

City_____ State_____



What's the big idea buying several kinds of coal for our steam plants?

It's a good idea. The kind of coal that burns most economically in the old boilers isn't efficient for the new ones.



How do you know you're right?

Look at the coal bills. We are generating more steam at a lower fuel cost. You can tell from the ashes we are getting more complete combustion, and there's less clinkering.

Where did you get this idea, anyway?

From the C & O Coal Department. They convinced us that different types of burning equipment need different types of coal. From the high quality coal produced on the C & O, we selected the quality and size of coal that works best in our particular installations.

P.S.

There's a lot more to buying coal than the cost per million BTU. Why not contact coal producers on the C & O to solve your particular fuel requirements, or write to: R. C. Riedinger, General Coal Traffic Manager, Chesapeake & Ohio Railway Co., Terminal Tower, Cleveland 1, Ohio, for the assistance of a C & O fuel service engineer.

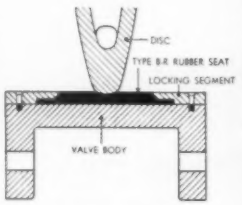
Chesapeake and Ohio Railway

WORLD'S LARGEST CARRIER OF BITUMINOUS COAL

Be Sure of DROP-TIGHT CLOSURE

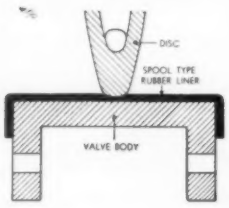
Valve with Rubber Seat

In this Rockwell butterfly valve the stainless steel edge of valve disc presses at 90° into thick, precision-molded Type B-R rubber seat, which is clamped in position by removable metal locking segments. Shaft of stainless steel (or other metal). Bearings—lifetime, heavy duty graphite-lubricated, sleeve type. No corrosion or contamination. Meets AWWA specifications for 25, 50 and 125 p.s.i. butterfly valves.



Valve Rubber-Lined

Valve with rubber spool liner—natural or synthetic, hard or soft—vulcanized and cemented to valve body. Preferred where fluid may affect cast iron or fabricated steel construction.



Other Advantages

- Minimum Restriction to Flow
- Self-Cleaning—No Debris-Collecting Pockets
- Compact • Lighter Weight
- Require Less Space
- Easier to Install

W. S. Rockwell Butterfly Valves are made in sizes from 4" to 144"; cast iron, fabricated steel or alloy construction. Furnished with any manual or automatic operator.

W. S. ROCKWELL COMPANY

ROCKWELL SINCE 1888 BUILT

BUTTERFLY VALVES • SLIDE VALVES • AUTOMATIC VALVES

2706 ELIOT STREET • FAIRFIELD, CONN.

Sales Representatives in Principal Cities

Catalogs for You

Write directly to the manufacturers or use Post Card at P. 52

New Face for Old Traffic Signs

257 Don't discard old traffic signs advises the GRACE SIGN & MFG. CO., 3605 S. SECOND ST., DEPT. CA, ST. LOUIS 18, MO. Instead, renovate them with "Ez-On" reflectorized sign faces. "Ez-On" faces are available in three shapes—octagon, diamond, and rectangular—and are easily installed in minutes. A sample sign will be furnished on request.

Measures Water Magnetically

258 The Magnamatic register operates on any make water meter, providing accurate readings quickly and economically. A portable reading unit reads the register through the case magnetically, so that there is no need for re-reading. The metal-enclosed, oil-filled, sealed unit is said to last the life of the meter. Write MAGNAMATIC CORP. of AMERICA, 803 W. MAIN AVE., SAN ANTONIO, TEX.

The Handiest Water Pumps

259 Submersible, turbine-type water pumps provide cost-saving convenience, limited only by the designer's ingenuity. He can forget about costly pump houses, can place pumps in exclusive residential areas—under drives and sidewalks. He can also forget his worries about casing alignment. For full details about this or other pumping requirements, write BYRON JACKSON, DIV. of BORG-WARNER CORP., P. O. BOX 2017, TERMINAL ANNEX, LOS ANGELES 54, CALIF.

"Bottle-Tight" Couplings for Steel Water Pipe

260 Steel water pipe joined with Dresser couplings is fast and easy to install, and assures long, trouble-free service. The long pipe lengths call for fewer joints, reducing installation time. "Bottle-Tight" Dresser couplings "float" the pipe sections in the joints, facilitating installation regardless of job conditions. For full details, write DRESSER MFG. DIV., 69 FISHER AVE., BRADFORD, PA.

½-Yard Back-hoe Has Long, Deep Reach

261 Equipped with a heavy-duty ½-yard hoe attachment, the Koehring 205 digs 17¾ feet below grade, simplifying a variety of municipal excavating jobs. The machine is easily converted from a hoe to a ½-yard shovel, will handle a clamshell or dragline bucket on a wide work radius, and has a 10-ton lift capacity as a crawler-mounted crane. As a truck crane, it lifts up to 15 tons of material quickly and easily. Write KOEHRING CO., MILWAUKEE 16, WIS.

Assures Firemen Full Breathing Protection

262 Firemen equipped with Scott Air-Paks can attack the worst chemical fire with complete breathing safety. This efficient respiratory protective equipment has saved many lives and reduced fire losses to a minimum. It is discussed in detail in literature from the SAFETY EQUIPMENT DIV., SCOTT AVIATION CORP., 191 ERIE ST., LANCASTER, N. Y.

(See p. 36 for more Bulletins)

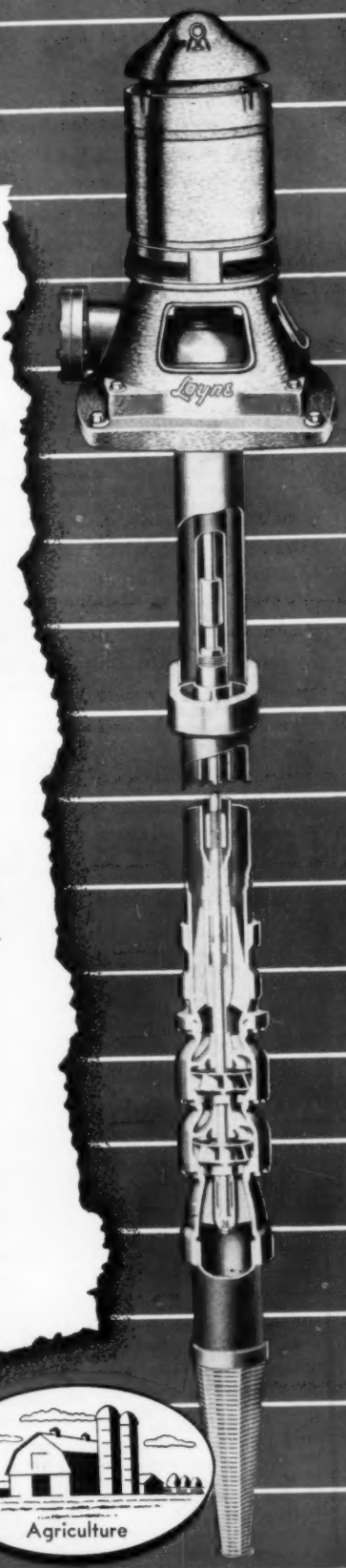
Rhinelander, Wisconsin ...Relies on Layne!

An imaginary monster, the "Hodag," brought fame to Rhinelander, Wisconsin, and this charming smaller city is known as "the Home of the Hodag." Born at the time of the logging boom, Rhinelander today is a tourist and industrial center.

Smaller municipalities such as Rhinelander, as well as the great metropolitan centers of the nation, know that utmost dependability in pumps is spelled L-A-Y-N-E. That's why Rhinelander relies on Layne.

LAYNE
& BOWLER, INC.
MEMPHIS
General Offices and Factory

LAYNE ASSOCIATE COMPANIES THROUGHOUT THE WORLD



Water Wells • Vertical Turbine Pumps • Water Treatment

Catalogs for You

Write directly to the manufacturers or use Post Card at P. 52

Power Mower Speeds Park Maintenance

263 Large bicycle wheels for easy maneuverability, and a powerful 2- to 6-hp engine, enable the Yazoo mower to cut grass and weeds quickly, easily, and at less cost. Three models are available for cutting 20-, 24- and 27-inch swaths. For a descriptive catalog, write YAZOO MFG. CO., 3607 LIVINGSTON RD., JACKSON, MISS.

"Packaged" Forms for Curbs and Gutters

264 One set of Blaw-Knox Steel Universal Street Forms will handle every curb, gutter and sidewalk job quickly and economically. These forms are standardized for interchangeability. You can use them over and over on a variety of construction jobs. For details on the complete package, write BLAW-KNOX CO., CONSTRUCTION EQUIPMENT DIV., MATTOON, ILL.

Street-Lighting Standards

265 Three good reasons for using Alcoa aluminum street lighting standards in your community are their high strength, light weight, and clean, modern appearance. The economical poles are easy to install, and never need painting. Other Alcoa products include bridge railings, signs, and various highway accessories. Write ALUMINUM COMPANY OF AMERICA, 1976-D ALCOA BLDG., PITTSBURGH 19, PA.

Mercury Street Lighting

266 The 100-watt mercury lamp for which this Wheeler luminaire was designed is rated at 4,000 hours, and provides 15,000 hours of service to burn out. The crescent reflector eliminates the need for enclosing glassware, and reduces glare. For additional data on economical street lighting, write WHEELER REFLECTOR CO., 275 CONGRESS ST., BOSTON, MASS.

Loaders and Ditchers

267 Included in this dependable line of tractor attachments are the Shawnee "Special" loader, the sturdy "Loadmaster," and two ditching units, the Shawnee "Scout" ditcher and the Model 62. Also cranes, street brooms, angle dozers, bulldozers and snow buckets. Get full details from the SHAWNEE MFG. CO., INC., 1947U, N. TOPEKA AVE., TOPEKA, KANS.

Pedestrian Signals

268 A two-line red indication for DON'T WALK, and a one-line green indication for WALK, are featured in the Winko-Matic-Lawton pedestrian signal. The 5½-inch letters are housed in an aluminum case, and may be furnished with a blue-white walk indication. Two models are available in different sizes. Write WINKO-MATIC SIGNAL CO., LORAIN, OHIO.

Butterfly Valves

Rubber-lined butterfly valves and those designed with a rubber seat, are offered by W. S. ROCKWELL CO., 2706 ELIOT ST., FAIRFIELD, CONN. These lightweight valves are easy to install, require minimum space, and assure "drop-tight" closure. They are available in inside diameters from 4 to 144 inches, in cast iron, fabricated steel or alloy construction.

Automation Parking Pays Big Revenues

270 Easily installed at public parking lots, WRRS electric parking gates operate with remote controls, using coins, tokens, keys, or any combination of these methods. The gates are economical to maintain and eliminate the need for attendants. They are safe, function in all types of weather, and are said to last up to 30 years. Descriptive literature is available from WESTERN RAILROAD SUPPLY CO., 2430 S. ASHLAND AVE., CHICAGO 8, ILL.

All Types of Glass Covers for Sewage Treatment Plants

271 Wherever glass covers are needed in your sewage treatment plant—for sludge beds, sprinkling filters, or tanks—there is a Lord & Burnham enclosure to meet your requirements. A set of six *Engineers Service Sheets*, complete with details, specifications and recommendations, will be furnished by LORD & BURNHAM, DIV. of BURNHAM CORP., IRVINGTON, N. Y.

New Booster Pumps

272 A submersible type booster pump designed for typical sump, line booster, cooling tower, fire protection and barrel pumping installations, is offered by the LAYNE & BOWLER PUMP CO., 2943 VAIL AVE., LOS ANGELES 22, CALIF. The new Verti-Line pump provides quiet, trouble-free operation in any weather, and utilizes a minimum amount of space. It is available in a variety of models ranging from 5 to 150 hp, with discharge heads from 50 to 500 feet and 100 to 4,000 gpm capacity. Literature on request.

(See p. 38 for more Bulletins)

FREE TRIAL OFFER

on the all new

Fisher

"Electronic Witch" M-SCOPE Pipe Finder

Try Fisher's new "Electronic Witch" M-SCOPE for 10 days — FREE —!

Test this new pipe and cable finder under YOUR actual working conditions. This advanced instrument outperforms any pipe locator on the market regardless of price or design!

Simply state on your company's purchase order that you want the Fisher 10 day FREE TRIAL OFFER. Trial period begins the day the instrument arrives. Your only expense is the nominal shipping charges.

ONLY $162.50

with indestructible Fiberglas cabinets

100% ACCEPTANCE

Last year, a full 100% of those who took the "Electronic Witch" on trial purchased the instrument.

FREE 1956 CATALOG

FISHER

Research Laboratory, Inc.

Dept. AC-1, Palo Alto, Calif.

Geophysical Instruments Since 1932

A NEW AMERICAN ELM IS BORN

HERE IS A TREE you've been looking for! Now used in large numbers by many big park departments, it is ideal for city planting. The rows of 8-year-old Augustine Ascending Elms shown above are growing in a large Eastern city which has more than 1,000 of them planted on its parkways.

These **columnar** trees **grow rapidly, survive severe storms, do not disturb turf** around their bases, are guaranteed to **resist elm plagues,** and **will not obstruct traffic.** They are **perfectly reproduced** by grafting to preserve the characteristics of the original natural mutation. If you have not already received full information about the popular **Augustine Ascending Elm,** write for literature today. Ask for a quotation on your needs and be ready for the wisest spring tree planting you have ever had. Orders taken immediately for spring delivery.

Augustine Ascending Elm Research Association

932 E. 50th St. **Chicago 15, Ill.**

ELM

NEW GALION T-500 and T-600 GRADE-O-MATIC MOTOR GRADERS

*Utilizing a Torque Converter and Power-Shift Transmission

NEW STANDARDS OF WORK PRODUCTION !

Engineered balance of weight and power produces the utmost in "PUSH-POWER" at the blade — where power means most in moving more material in quicker cycles. Torque Converter drive provides up to 300% torque multiplication for tough going, absorbs shock loads and prevents engine lugging and stalling.

NEW EASE OF OPERATION!

No tiresome old-type gear shift or foot clutch to operate. All you do is move the fingertip hydraulic control levers. Either forward or reverse shift can be made "on the go"— while moving in either direction. Operator fatigue is greatly reduced.

TORQUE CONVERTER AND POWER-SHIFT TRANSMISSION.

Because of the AUTOMATIC features on Galion GRADE-O-MATIC Graders the human element is reduced to a minimum in achieving top grader performance.

These include AUTOMATIC power multiplication and application as needed, and AUTOMATIC adjustment of engine speed to the load at any predetermined working or travel speed.

ESTABLISHED GALION 1907

MAIL THIS COUPON FOR COMPLETE INFORMATION

THE GALION IRON WORKS & MFG. CO.
GALION, OHIO, U. S. A.

THE GALION IRON WORKS & MFG. COMPANY
Dept. A-28 Galion, Ohio, U.S.A.

Please send me literature on the GRADE-O-MATIC Graders checked:

☐ Model T-500 ☐ Model T-700 — 190 H.P., 40,125 Lbs. The world's biggest, heaviest, most productive Motor Grader
☐ Model T-600

OTHER GALION MOTOR GRADERS: Models 118, 104, 450, 303 & 503

PERSON _____ TITLE _____

FIRM _____

STREET _____

CITY _____ STATE _____

get your FREE copy of this new booklet

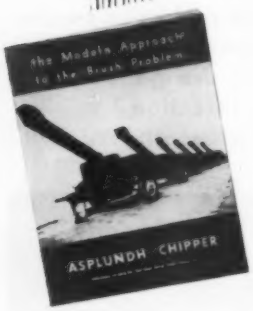
"THE MODERN APPROACH TO THE BRUSH PROBLEM"

It tells how you can—

cut loading and hauling costs
—1 truckload of chips equals at least 4 of brush

eliminate brush burning
—a boost to your public relations

provide chips, a valuable by-product
—use them for mulching, shrub beds, erosion control, walks and cushion material in playground areas.



Demonstration easily arranged at your convenience, without obligation.

ASPLUNDH CHIPPER COMPANY
505 York Road, Jenkintown, Pa. Dept. C-2

Please send me FREE BOOKLET, *The Modern Approach to the Brush Problem*

NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

BY ACTUAL TEST THE FASTEST CHIPPER MADE

Catalogs for You

Write directly to the manufacturers or use Post Card at P. 52

Adding Machine Features "Live Keyboard"

273 A "live keyboard" with keys instantly adjustable to each operator's touch, is a special feature on the new National Deluxe adding machine. The machine includes such time-saving features as an automatic clear signal, subtractions in red, and an automatic credit balance in red. For additional data, write THE NATIONAL CASH REGISTER CO., DAYTON 9, OHIO.

A Good Warning System Minimizes Disasters

274 Is your present siren or alarm system adequate? A good warning system should do more than announce a disaster; it should alert your entire population to take cover; and summon civil defense, first aid, and emergency crews. The FEDERAL SIGN AND SIGNAL CORP., 8756 S. STATE ST., CHICAGO 19, ILL., will furnish larger and louder sirens to meet your requirements. Details on request.

Controls and Meters Chlorine Gas

275 A volumetric chlorine gas feeder, Model EVS, controls and meters chlorine gas under vacuum, producing and delivering a chlorine-water solution to the point of application. The low-cost Chlorinizer is accurate and dependable, is equipped with automatic safety features, and is easy to install. It is available from BUILDERS-PROVIDENCE, INC., 358 HARRIS AVE., PROVIDENCE, R. I.

Aerial Maps

276 A report on the accuracy and dependability of aerial photography and photogrammetry is contained in a new, 8-page brochure, *Serving the Engineering Profession*. The booklet includes examples of topographic maps of one-foot precision, planimetric maps, photographic mosaic maps, and plan and profile sheets. For your copy, write ABRAMS AERIAL SURVEY CORP., 606 E. SHIAWASSEE ST., LANSING 11, MICH.

New Fog Nozzle for Fire Fighting

277 Increase the efficiency of your fire-fighting equipment with this new adjustable fog nozzle, equipped with a large protective bumper and available in either polished brass or chrome plate. The nozzle is easily adjusted for either straight stream, a narrow fog pattern, or a wide fog pattern. It is available in sizes ranging from ¾ to 2½ inches. For full details on the "PDQ," write AKRON BRASS MFG. CO., INC., WOOSTER, OHIO.

Small Crane, Many Duties

278 Nine efficient attachments are available with the low-cost Bantam Crane, enabling the unit to lift, dig, load, drive pile, and simplify all your materials handling operations. The machine may be obtained in carrier, crawler and self-propelled models. Crane capacities range from 10,000 to 14,000 pounds, and digging capacities from 90 to 100 yards per hour. Write SCHIELD BANTAM CO., 234 PARK ST., WAVERLY, IA.

(See p. 40 for more Bulletins)

New AUTOFLOW

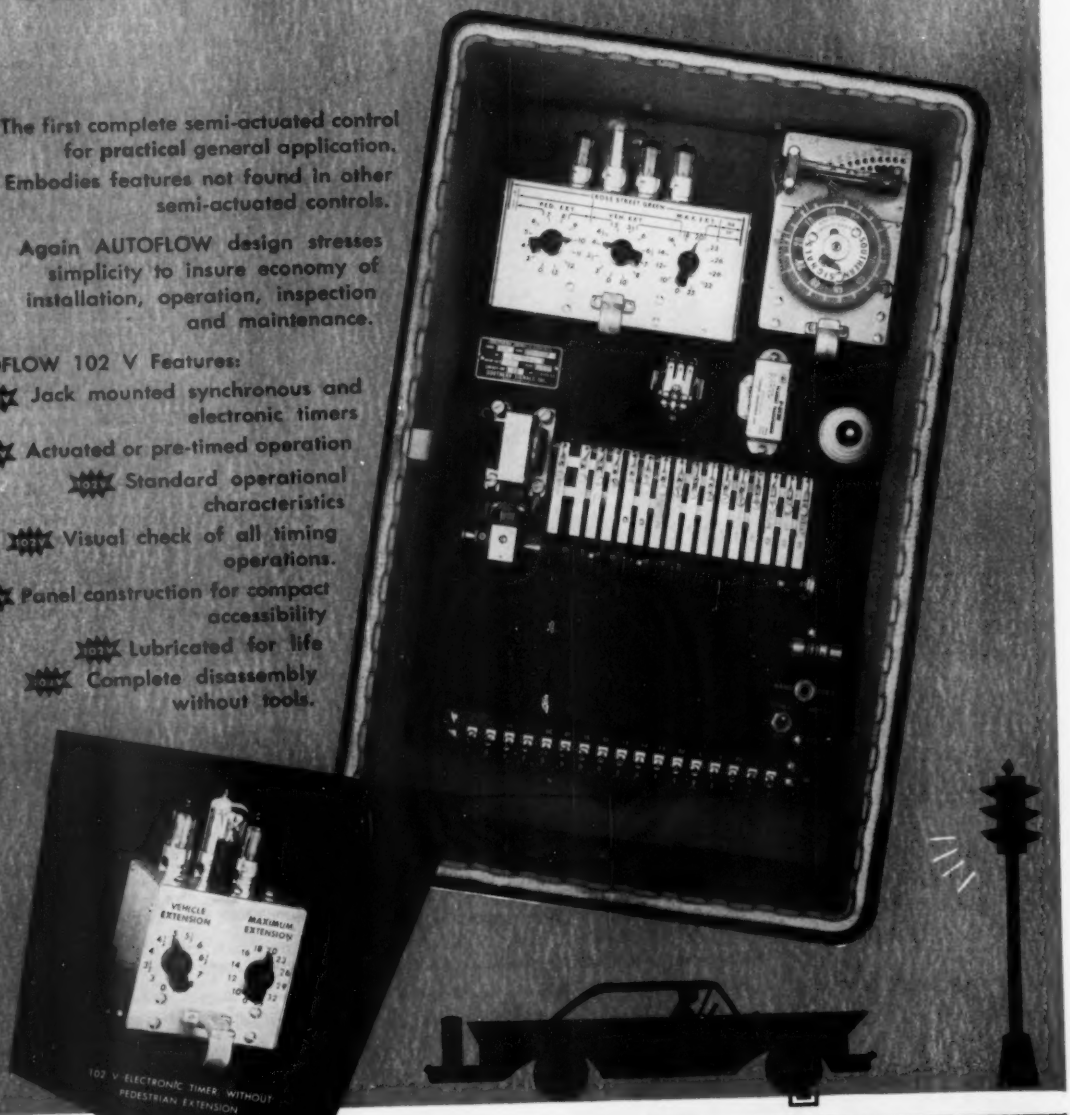
102V Semi-Actuated Control

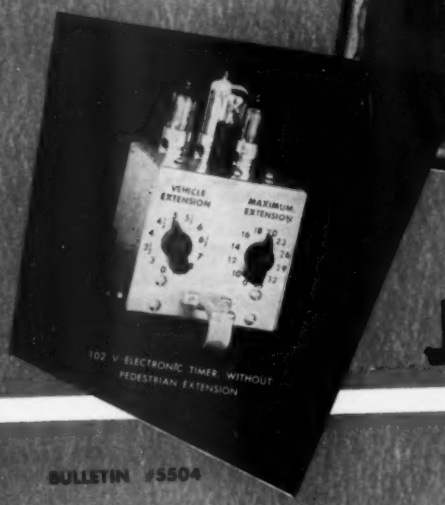
The first complete semi-actuated control for practical general application. Embodies features not found in other semi-actuated controls.

Again AUTOFLOW design stresses simplicity to insure economy of installation, operation, inspection and maintenance.

AUTOFLOW 102 V Features:

- 102V Jack mounted synchronous and electronic timers
- 102V Actuated or pre-timed operation
- 102V Standard operational characteristics
- 102V Visual check of all timing operations.
- 102V Panel construction for compact accessibility
- 102V Lubricated for life
- 102V Complete disassembly without tools.





102 V ELECTRONIC TIMER, WITHOUT PEDESTRIAN EXTENSION

BULLETIN #5504

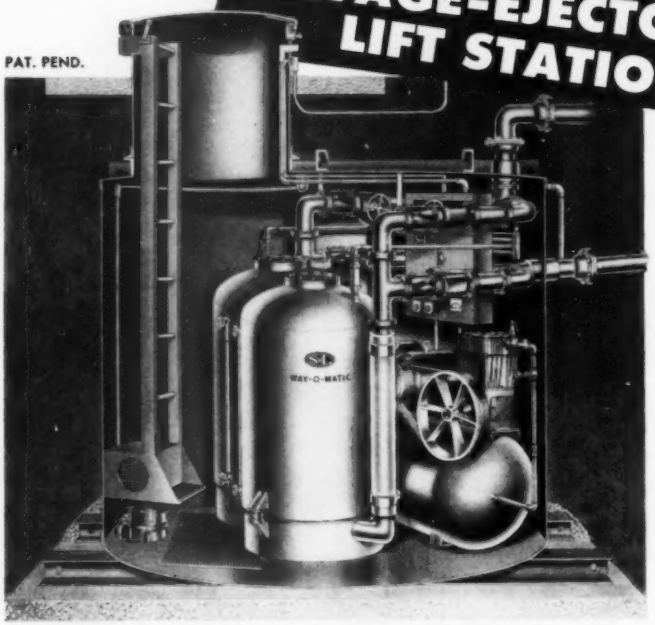
SOUTHERN Signals INC.

222 BEACH STREET • BOX 1303 • SHREVEPORT, LOUISIANA

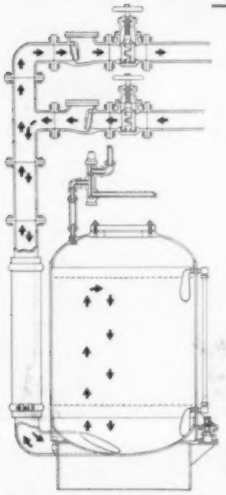
THE QUICKEST WAY TO THE RIGHT ANSWER—

Specify... The Smith & Loveless "WAY-O-MATIC" SEWAGE-EJECTOR LIFT STATION

PAT. PEND.



Factory-built by the makers of the widely used Smith & Loveless Factory-Built Pump Station, The "Way-O-Matic" pneumatic Sewage Ejector Station is ideally suited for the smaller applications—100 G.P.M. or less —where no satisfactory sewage pump is available.



FACTORY-BUILT QUALITY WITH SAVINGS
NO FLOAT ROD TO BIND
NO STUFFING BOX TO LEAK
NO ELECTRODES TO FOUL OR SPARK
NO MESSY MAINTENANCE

- An integrated design, each piece proven by the test of time.
- Precision assembled by factory experts.
- Automatic dehumidifier to eliminate condensation.
- Prewired with a color coded central electrical control cabinet.
- Factory tested and adjusted by actual operation before shipment.
- Easily and quickly installed.
- Especially designed for minimum maintenance.

Only the "Way-O-Matic" eliminates floats and electrodes—by "weighing" sewage receiver and contents. No control parts touch the sewage.

For Job Recommendations, Complete Specifications, and Drawings—all part of the latest edition of the 100 page Smith & Loveless lift station Data Manual

WRITE DEPARTMENT 10

S&L Smith & Loveless, Inc.
P. O. BOX 8172 KANSAS CITY, MISSOURI
Manufacturing Plant • Merriam, Kansas

REPRESENTATIVES IN PRINCIPAL CITIES

Catalogs for You

Write directly to the manufacturers or use Post Card at P. 52

Big and Little Asphalt Plants

279 On bituminous patchwork or paving operations, Kwik-Mix mixers are completely flexible to meet varying production requirements and job conditions. Their efficient, mobile, rubber-tired design lets you use them advantageously on scattered city jobs. The larger central-mix plants will turn out big daily tonnages. Write KWIK-MIX CO., PORT WASHINGTON, WIS.

Ends Water Hammer

280 *Bulletin 654* explains how Williams-Hager flanged check valves keep piping systems "safe and silent"—free from dangerous vibration and noise. These valves are available for any service, in sizes ranging from 1 to 20 inches. Copies of the new bulletin will be furnished by THE WILLIAMS GAUGE CO., INC., 148 STANWIX ST., 2 GATEWAY CENTER, PITTSBURGH 22, PA.

Pay-As-You-Go Parking

281 How to plan for self-liquidating off-street Parkades and on-street traffic and parking controls, is discussed in two new booklets available, without cost, from M. H. RHODES, INC., HARTFORD 6, CONN. The company's Mark Time parking meters are designed for accurate, dependable operation. They are economical to maintain and provide maximum meter revenues.

Provides Clean Air for Sewage Treatment

282 In sewage treatment installations, the Spencer Turbo-Compressor may be used for tapered or step aeration, activated sludge, chamber aeration, air blow back, washing grit, and air flotation of solids and greases. In municipal incinerator plants, the centrifugal-type unit provides combustion air. Full details are available from THE SPENCER TURBINE CO., HARTFORD 6, CONN.

Asphalt Paving

283 A variety of asphalt cements, cut-back asphalts and slow-curing asphaltic oils for heavy-duty, intermediate and low-cost types of street construction, may be obtained from THE TEXAS CO., ASPHALT SALES DIV., 135 E. 42nd ST., NEW YORK, N. Y. The methods and materials recommended for all types of street paving are described in two new booklets. Copies on request.

Efficient Diesel Engines

284 A safe power bet for any municipal plant is a Cooper-Bessemer diesel engine, designed to run smoothly and economically on either heavy fuel, light crude, or a combination of both. This company also offers gas and gas-diesel engines, and engine and motor-driven compressors. For full facts, write the COOPER-BESSEMER CORP., MOUNT VERNON, OHIO.

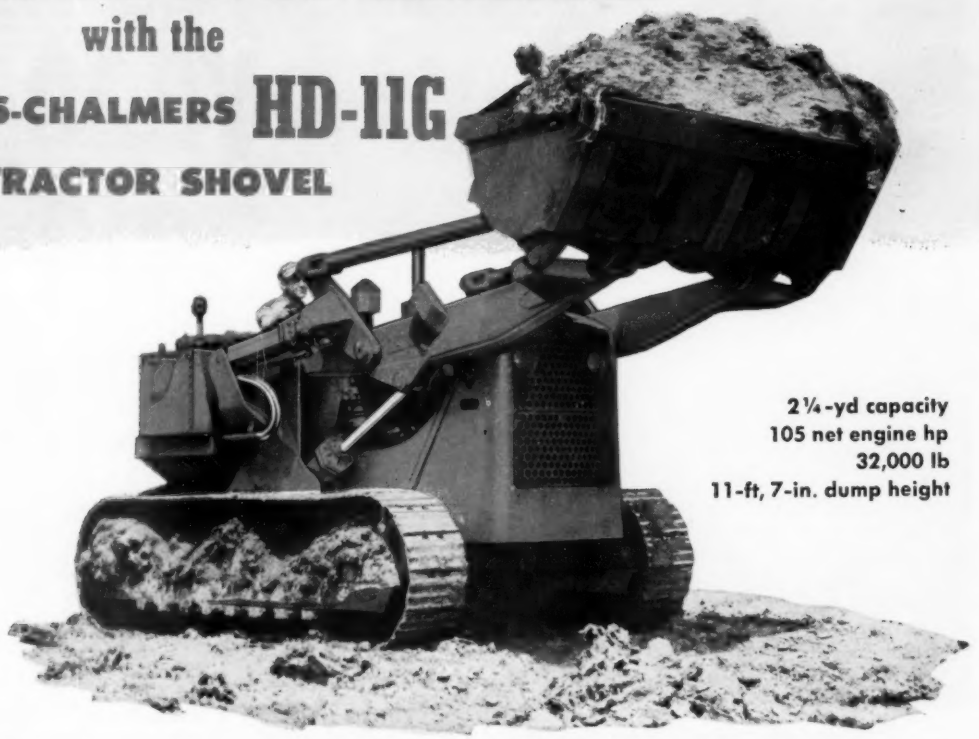
New Traffic Signal

285 When used with a new post top terminal compartment bracket, or with other serrated brackets, the Eagle Sentry traffic signal can be locked into any position, protecting it from wind and pranksters. The signal's new offset construction assures lighter weight and greater stability than is possible with conventional signals. For *Bulletin A10-1*, write EAGLE SIGNAL CORP., MUNICIPAL DIV., DEPT. AC-156, MOLINE, ILL.

(See p. 42 for more Bulletins)

NEW OUTPUT ABILITY

with the ALLIS-CHALMERS HD-11G TRACTOR SHOVEL



2¼-yd capacity
105 net engine hp
32,000 lb
11-ft, 7-in. dump height

NEW POWER is provided by the modern, 105-hp Allis-Chalmers diesel. Tornado Turbulence and "follow-through" combustion mean cleaner burning and more power from fuel, as well as smoother engine performance and extra long engine life. Added power pays off in extra crowding and digging ability, fast work cycles.

NEW CAPACITY. Big 2¼-yd bucket is streamlined to roll in large loads more easily. Improved design cuts spillage, clean dumping saves time and effort shaking out loads. Optional 2¼-yd tip-back bucket rolls back 25 degrees at ground level, handles bigger loads of loose material.

NEW STABILITY. Extra-long track — with almost 9 ft of track on the ground — plus 8 truck wheels on each side and 32,000 lb of weight, give the HD-11G unusual stability, plenty of traction.

NEW-TYPE HYDRAULIC SYSTEM is simpler, safer, easier to maintain. Tank has fewer external fittings. Magnetic filters and suction-line screens protect entire system. Hydraulic pump offers fast action, long life.

NEW OPERATOR CONVENIENCE. The HD-11G features easily controlled, accurate bucket action; reduced lever pull with new-type clutch; full vision; roomy platform; foam rubber seat; 60-gal fuel tank.

NEW DEPENDABILITY AND SERVICING EASE result from such features as heavy-duty truck wheels and idlers; new, long-life track; new-type, long-lasting, ceramic master clutch lining; unit construction's quick disassembly and assembly of major parts; 1,000-hour lubrication intervals for roller bearing truck wheels, support rollers, idlers.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

stop in soon and see the production-boosting HD-11G

ALLIS-CHALMERS

Catalogs for You

Write directly to the manufacturers or use Post Card at P. 52

New Back-Hoe Attachment

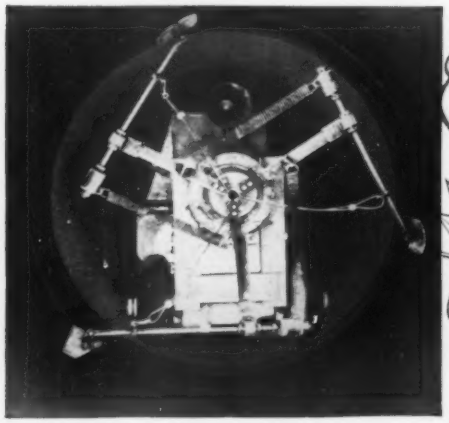
286 Easily attached or detached from your tractor in less than five minutes, the new Davis back-hoe digs at right angles to either side of the tractor—to the rear—or at any spot in between. The hoe digs 13 feet deep in full view of the operator. It features a wide frame with two individually-controlled hydraulic stabilizers. Details on the back-hoe and the Davis loader attachment are available from MID-WESTERN INDUSTRIES, INC., 1009 S. WEST ST., DEPT. A, WICHITA, KANS.

Turn Sewage Gas into Dollars with This Engine

287 Don't destroy dollars in the waste-gas burner of your sewage treatment plant. Install a gas engine, turn this waste product into power, and watch your operating costs drop. Get full data from CLIMAX ENGINE AND PUMP MFG. CO., 208 S. LaSALLE ST., CHICAGO 4, ILL.

Clean Catch Basins Easily

288 Whatever the debris in a catch basin, it is quickly and easily removed with a Hayward orange peel catch basin bucket. These dependable, easy-to-operate buckets are described and illustrated in *Bulletin 805*. For your copy, write THE HAYWARD CO., 50 CHURCH ST., NEW YORK 7, N. Y.



CENTRILINE goes to CUBA

The Centriline process has been selected by Municipio de la Habana to play an integral part in the expansion of this city's water supply system. Over 114,000 feet of new welded steel pipe, ranging in diameters from 30" to 78", will be cement-mortar lined in the near future.

In this process, the novel machine illustrated above is drawn through the pipe while cement-mortar is centrifugally sprayed on the pipe walls and troweled smooth by the rotating arms. Mortar thickness is controlled by the speed of the entire machine. Because the pipes remain in place throughout the process, traffic interruption is cut to a minimum; time and money are saved.

Whether you're expanding or rejuvenating your water system, follow the lead of progressive city officials and engineers around the world. Call on Centriline to add years of new life to your water supply lines.

Supervising engineer on the project is Francisco Pividal, C. E.; Chief Engineer is Adrian Macia, C. E.; General Contractor: Comp. Constructora M. A. Gonzales del Valle, S. A.; Pipe Contractor & Manufacturer: Tuberia de Concreto Universal, S. A.

CENTRILINE CORPORATION

A subsidiary of the Raymond Concrete Pile Company

140 CEDAR STREET
NEW YORK 4, N. Y.

Branch Offices in Principal Cities of the United States and Latin America

• CEMENT-MORTAR LINING OF PIPES IN PLACE •

Fog Combats Flys and Mosquitoes

289 Using insecticides in solutions, emulsions or suspensions, the TIFA applicator fights insects with a wet or dry fog which spreads quickly and permeates the deepest crevices. The applicator may be used on the city dump, over swimming pools, and everywhere insects swarm. Write PRODUCTS DIV., TODD SHIPYARDS CORP., COLUMBIA & HALLECK STS., BROOKLYN 31, N. Y.

One Truck Loads, Hauls and Dumps Materials

290 City trucks equipped with a Holmes-Owen loader not only load, haul and dump materials, they also permit light digging, grading and cleaning-up operations, without additional man power. The loader is easily installed on most 1½- and 2-ton trucks. It is hydraulically operated, lifts ½-yard per bucket, and will load the average truck in minutes. Write ERNEST HOLMES CO., CHATTANOOGA, TENN.

Electric Hand Dryers for Public Washrooms

291 A permanent solution to sanitation and drying problems in public washrooms is presented in a new brochure from THE CHICAGO HARDWARE FOUNDRY CO. The booklet describes the Sani-Dri, an electric dryer with an instant starting push-button switch and automatic shut-off. It eliminates towel litter and saves maintenance expenses. Address the company at 5116 COMMONWEALTH AVE., N. CHICAGO, ILL.

Automatic Voting Machines

292 Human errors are eliminated when ballots are counted automatically with voting machines. Each candidate's total is accurately and permanently recorded on an individual counter. How your city can get quick, accurate results next election day, is explained in literature from the AUTOMATIC VOTING MACHINE CORP., JAMESTOWN, N. Y.

Save with Vertical Turbine Pumps

293 These vertical turbine pumps are champion low-cost, high-efficiency performers. They save expensive floor space in pump houses. You avoid problems of priming, and you can fit them into every duty from deep well to short-coupled booster pumping. For an illustrated bulletin, write JOHNSTON PUMP CO., BIN "K," PASADENA 15, CALIF.

Long-Burning Lanterns and Torches

294 Adequate safety lighting at street repair locations and other danger spots is easily obtained with Dietz kerosene lanterns and torches. The dependable No. 87 torch and the Dietz "Little Wizard" lantern are both designed to provide up to 30 hours of steady burning, regardless of weather conditions. For full information, write R. E. DIETZ CO., 100 LEAVENWORTH AVE., SYRACUSE 1, N. Y.

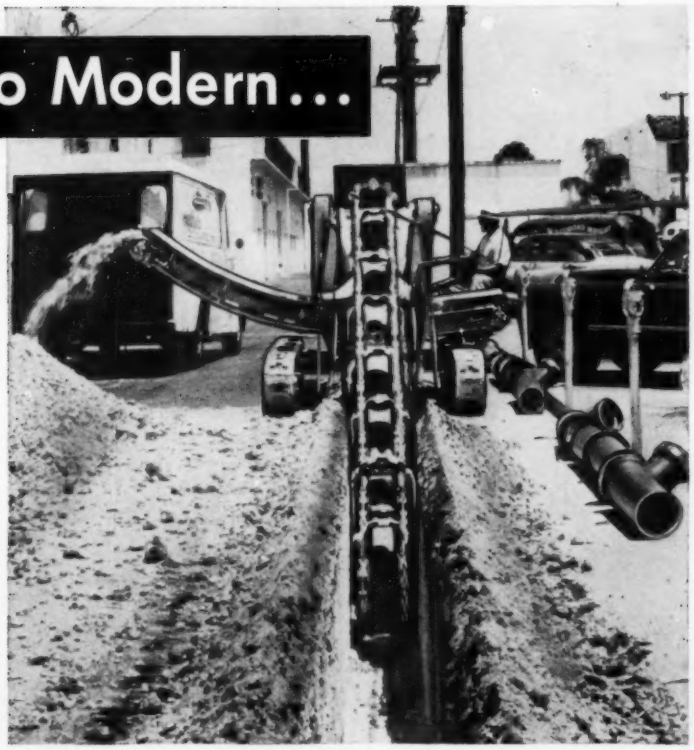
Welded Steel Pipe

295 Use Armco welded steel pipe for your water supply lines, underwater river crossings, bridge crossings, power house piping, and sewage disposal lines. The long-wearing pipe is available in diameters ranging from 6 to 36 inches, wall thicknesses from 9/64- to ½-inch, and lengths up to 50 feet. It is described in *Bulletin WSP-11055* from ARMCO DRAINAGE & METAL PRODUCTS, INC., MIDDLETOWN, OHIO.

(See p. 46 for more Bulletins)

When Cities Go Modern...

CLAY PIPE SEWERS GO IN



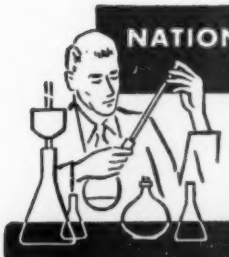
CORAL GABLES, FLORIDA, had a population of only 8,300 people in 1940. Today, the population has zoomed to more than 30,000—and public health facilities are being modernized to meet this amazing growth. A 259,000-foot bond-financed sewerage system, costing $3,372,000, is being installed.

Vitrified Clay Pipe is the safe choice of city officials, because it's sure to give dependable, trouble-free service long after the bonds are retired.

Clay Pipe is not only the *safe* material, but the practical material for municipal sewerage. A wide variety of new jointing methods and materials, developed through Clay Pipe research, insure a system that holds infiltration to a minimum, even in Florida's high-water-table areas. And Clay Pipe is the economical material, because its cost-per-year-of-service is the lowest. Where public health is at stake, why take chances on substitutes? Specify and install Vitrified Clay Pipe . . . guaranteed for 50 years.

FOR CORAL GABLES, FLA.—W. T. McIlwain, City Manager
CONSULTING ENGINEERS—Smith and Gillespie, Jacksonville, Fla.
CONTRACTORS—M. B. Garris and Associates, Coral Gables, Fla.

Vitrified CLAY PIPE — NEVER WEARS OUT!



NATIONAL CLAY PIPE MANUFACTURERS, INC.
1820 N. Street, N.W., Washington 6, D. C.

206 Connally Bldg., Atlanta 3, Ga.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio

C-256-1

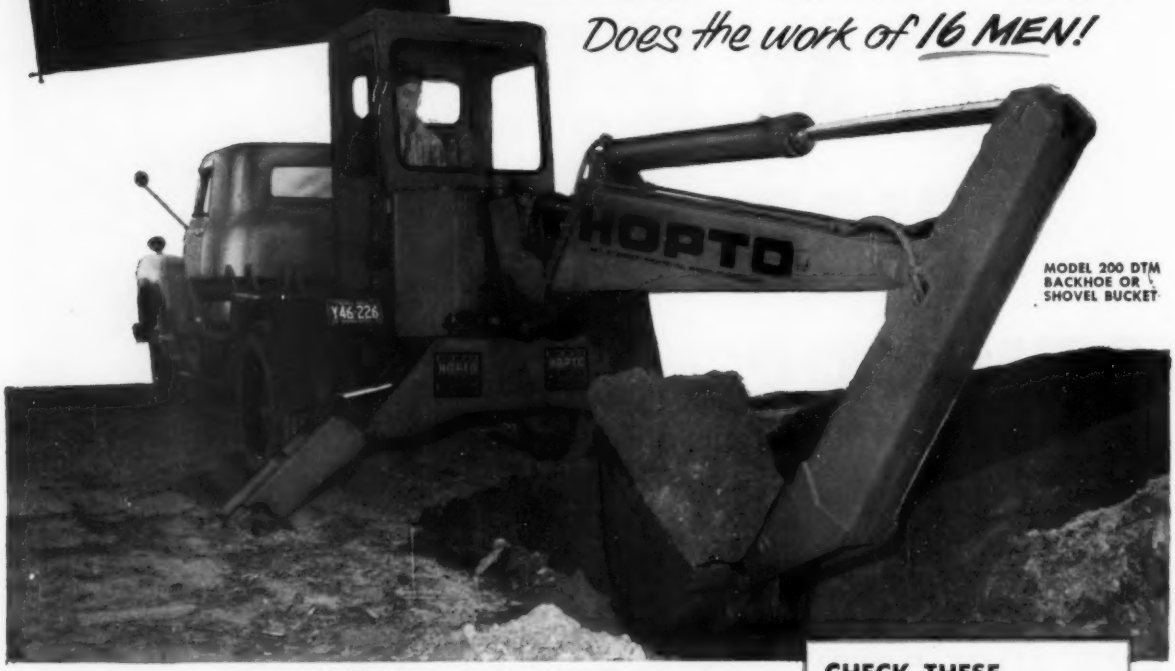
Progress in Public Health - Through Clay Pipe Research

• HYDRAULIC
• MOBILE
• LOW-COST

HOPTO

DIGGER • SHOVEL • CRANE

Does the work of 16 MEN!



MODEL 200 DTM BACKHOE OR SHOVEL BUCKET

digs DEEP ... lifts HIGH ... easy to operate!

Here's the fast-cycling HOPTO unit that equips you to profitably handle more jobs at lower equipment investment! The completely hydraulic HOPTO mounts on any 1½ ton or larger truck . . . one that may have been 'written off' but can still serve as a mobile base for this work-hungry, big-capacity unit!

Four simple and easily mastered control levers give finger-tip operation that is fatigue-free. That means more work done *more safely!* Retractable hydraulically operated outriggers quickly level unit . . . provide a solid, *safe* base from which to operate.

OTHER MODELS

From the large track-type continuous Badger Trencher down to the trailer-type HOPTO, Badger manufactures a complete quality line of digging equipment. HOPTO is also available as a power take-off operated or self-powered trailer model, as a unit for rear mounting on track-type or wheel-type tractors, as a complete self-powered wheel unit, the crawler unit shown below, the truck mounted unit illustrated above and a slightly smaller unit for truck mounting. HOPTO builds a *quality* unit to meet *your* needs, *exceed your expectations.*

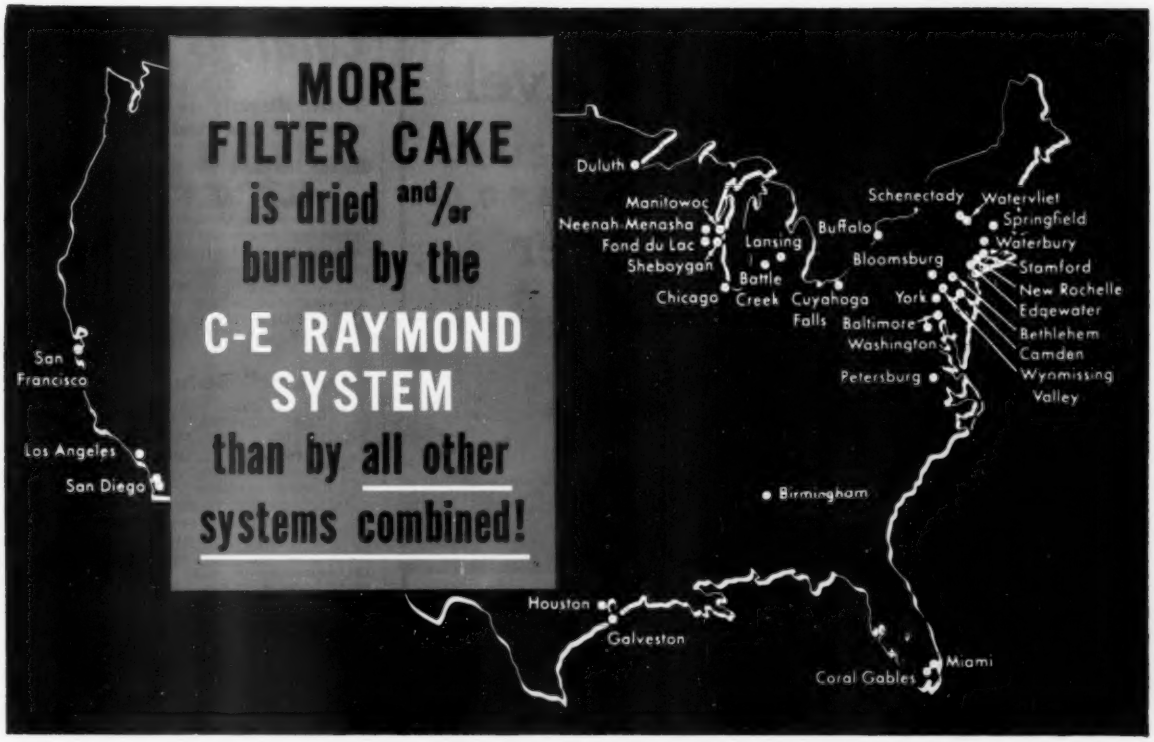
CHECK THESE HOPTO FEATURES

- Dipper stick extension tilts digging unit 135°; permits straight side, vertical digging. Eliminates hand work.
- Digs 11½' below surface.
- Lifts 13½' high with shovel bucket; more than 9' with backhoe.
- Alloyed steel hardened pins and self-aligning bearings at all pivot points.
- Variety of widths and types of backhoes and shovel buckets.
- Backhoes and shovel buckets have H & L teeth.

WRITE FOR FREE FOLDER!

BADGER MACHINE CO. DEPT. D WINONA, MINN.

MODEL SPC BACKHOE OR SHOVEL BUCKET



There's good reason why all over the country disposal plants for cities of every size are taking advantage of the C-E Raymond System's versatility. It is the *only system* available today that allows you to flash dry or incinerate sewage sludge – *alternately or concurrently, in any proportion.* Furthermore, it is available with a high-temperature deodorization system that eliminates odors.

Whether you wish to incinerate filter cake – or dry it to a marketable soil conditioner – a C-E engineer will be glad to help you plan an installation for your community. Just call the Combustion office nearest you.

COMBUSTION ENGINEERING

RAYMOND DIVISION

1315 North Branch Street, Chicago 22, Illinois

Eastern Office:
200 Madison Avenue
New York 16, N. Y.

Western Office:
510 West Sixth Street
Los Angeles 14, California

also flash drying and incineration systems
for industrial waste disposal

B-895

A booklet describing the operation of the C-E Raymond System is now available. For your copy, mail this coupon to Combustion Engineering, Raymond Division, 1315 North Branch Street, Chicago 22, Illinois.

NAME_____

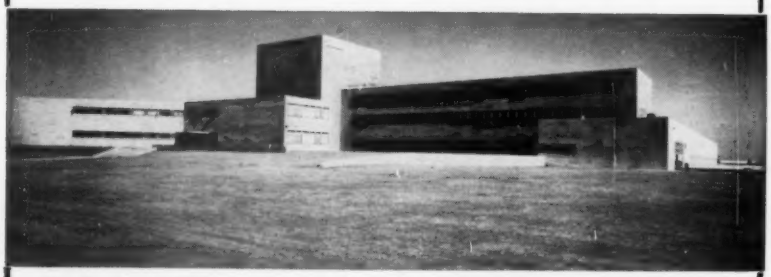
TITLE_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

R-103

Use Northern Gravel for Rapid Sand Filter



The South District Filtration Plant of the city of Chicago is the largest in the world. Northern Gravel Company furnished them 422 carloads with clocklike regularity, enabling installation continuously and economically.

Filter Sand Specifications

are carefully laid out. The Effective Sizes and Uniformity Coefficients used by Consulting Engineers and also recommended by the American Water Works Association are the result of long years of research and experience.

The Northern Gravel Company is equipped to give you prompt shipment whether it be one bag or many carloads, exact to specifications. Filter sand can be furnished with any effective size between 0.35 MM and 1.20 MM.

Chemical Quality

of the filter sand is also important. It must be hard, not smooth, and free of soluble particles. This requires perfect washing and grading facilities. We have every modern device for washing, drying, screening and testing.

Filter Gravel

supporting the Filter Sand Bed, must be in turn, properly graded to sizes calculated to support the Filter Sand, and be relatively hard, round and resistant to solution.

Northern Gravel has no equal in facilities and our reserves of both sand and gravel are inexhaustible. Northern Gravel Company has been in business over 40 years. We guarantee uniformity of products and our records enable us to duplicate your requirements on short notice. Our location is central and we have commodity rates in every direction.

Northern Gravel Company

Box 307 **Muscatine, Iowa** Phone: AMherst 3-2711

Catalogs for You

Write directly to the manufacturers or use Post Card at P. 52

Reflectorized Traffic Signs

296 Whether headlights are bright or dimmed, this improved reflective sheeting, Grotelite SS, insures maximum sign-to-car warning—in any weather. Grotelite reflectorized signs are waterproof and weather-proof, and provide long-range brilliance and clearness. They are described in *Catalog No. 754-T* from THE GROTE MFG. CO., INC., BELLEVUE, KY.

"Reboring" Restores Water Mains

297 By "reboring" your city's water mains, the NATIONAL POWER RODDING CORP. can restore them to 95% of their original design efficiency. The fast, economical operation of power rodding, mobile pumping and hydraulic pressure equipment restores the mains to full capacity, eliminating the cost of replacing them. For full details, address the company at 4600 W. MADISON ST., CHICAGO 44, ILL.

Sludge Disposal Problems?

298 Sludge disposal needn't be a problem. Equip your sewage treatment plant with a Nichols Herreshoff incinerator and you have a simple, trouble-free solution. The Nichols Multiple Hearth unit will burn the sludge completely, or it will dry sludge so that it can be used conveniently for a fertilizer, if desired. For full details, write NICHOLS ENGINEERING & RESEARCH CORP., 70 PINE ST., NEW YORK 5, N. Y.

Radar Vehicle Detector

299 Used to detect and count vehicles for traffic-actuated signal controls, Model RD-1 is completely electronic, mounts overhead, and registers vehicles passing through a microwave beam. No pavement excavations are needed to install the detector. Further, the unit is dependable under all weather and climate conditions. It is easily moved or adjusted to cover traffic in one, two or three lanes, moving at speeds from 2 to 70 mph. Write AUTOMATIC SIGNAL DIV., EASTERN INDUSTRIES, INC., NORWALK, CONN.

Kill Nuisance Insects Economically

300 One piece of equipment, the Turntable "Model F" sprayer duster, will handle your community's entire insect control program. The unit features an air blast delivery up to 180 mph, and is able to reach to top of the tallest trees with either dilute or concentrate sprays and chemical dusts. It is fully described in literature from BUFFALO TURBINE AGRICULTURAL EQUIPMENT CO., INC., GOWANDA, N. Y.

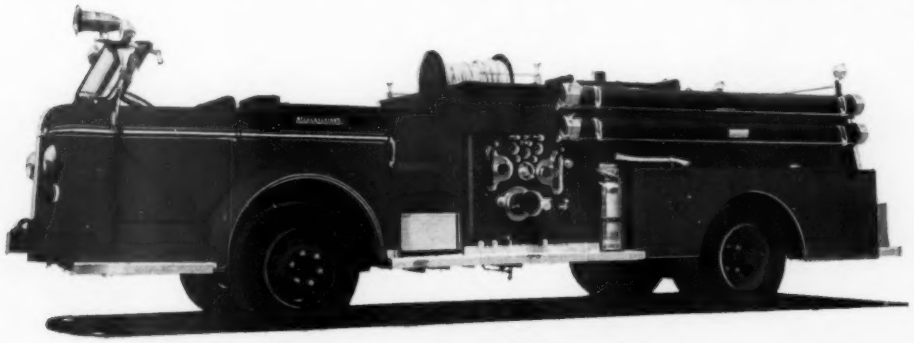
Asphalt Blanket Prevents Leakage

301 When constructing a new water reservoir in your community, make sure it is leak-proof, advises the GULF SEAL CORP., P. O. BOX 508, SOUTH HOUSTON, TEX. You can do this with a Gulf-Seal asphalt lining. These linings are designed for use on canals, ditches and reservoirs, and for erosion control purposes. Samples of the lining, along with an informative engineering brochure, will be furnished on request.

(See p. 207 for more Bulletins)

New AMERICAN LaFRANCE Models

RANGER 500 G.P.M. Pumper
CRUSADER 750 G.P.M. Pumper
PROTECTOR 1000 G.P.M. Pumper

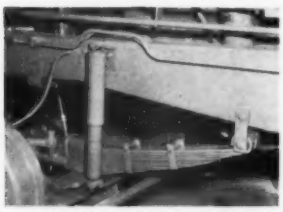


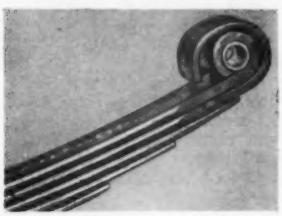
PROTECTOR, 1000 g. p. m. Class A

Give You *Extra Values* for Better Riding, Greater Driving Control, Safer Operation

• Check these *Extra Values*

• Direct Acting Shock Absorbers, Rear and Front.





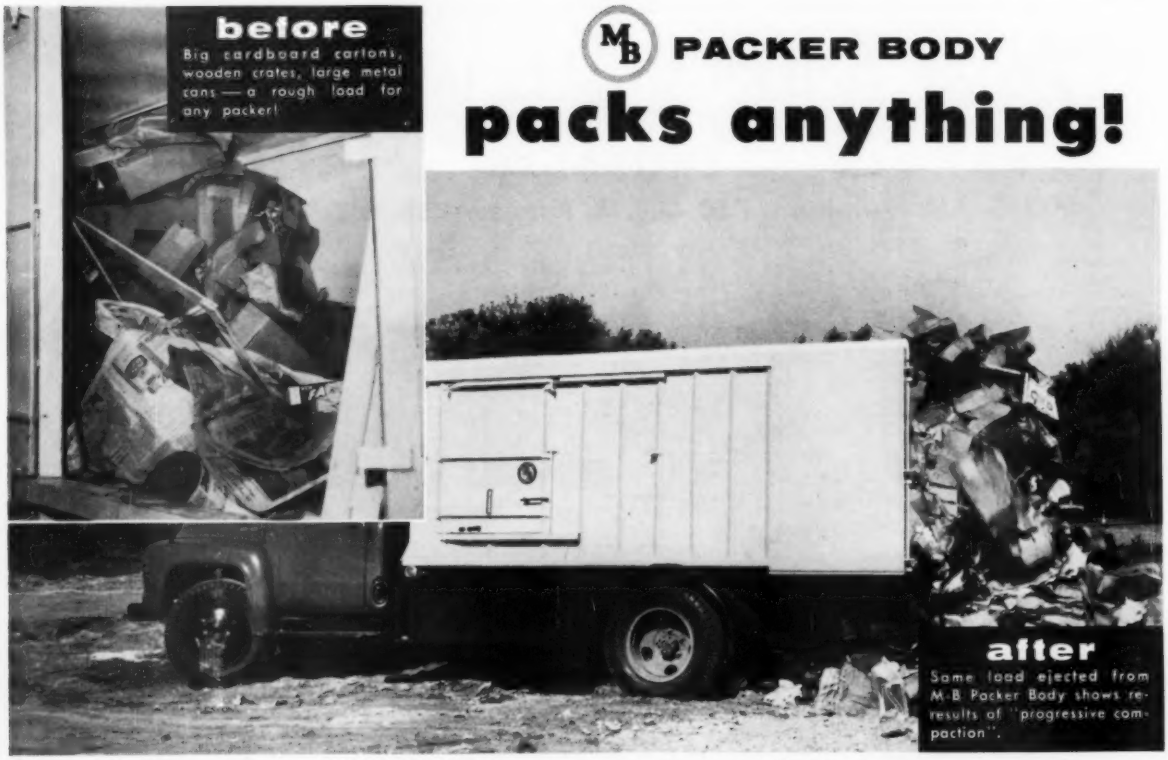
• Added safety feature on springs is "wrap-around" second leaf to preserve steering and alignment control.

Control of a fire engine on the highway involves more than steering and brakes. American LaFrance engineers have provided a combination of spring rate and shock absorber action to give the safest, smoothest controlled ride without pitch, bounce or roll on the roughest streets or highways.

The long springs, 54" center to center on front, and 60" center to center on rear, contribute to this outstanding performance. The direct acting shock absorbers at both front and rear axles provide the smooth control for safety and stability. The springs have the added safety feature of a "wrap-around" second leaf at each spring eye.

See our representative for details and specifications

AMERICAN LaFRANCE CORPORATION
ELMIRA, NEW YORK, U. S. A.
LaFRANCE FIRE ENGINE and FOAMITE LIMITED
TORONTO, 9, ONTARIO, CANADA


before
Big cardboard cartons, wooden crates, large metal cans — a rough load for any packer!
after
Same load ejected from M-B Packer Body shows results of "progressive compaction".

M-B PACKER BODY packs anything!

no "call-backs"!

With an M-B Packer on the route, every stop counts! No call-backs for bulky, awkward items left behind by ordinary packers. Material too large for the extra-wide side loading doors is carried easily on the spacious, reinforced roof. M-B Packers cover bonus blocks of collection!

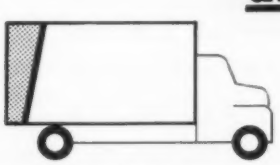
no selective loading!

Collectors don't waste valuable time sorting refuse for vulnerable hydraulic packing mechanisms. M-B Packers take all types of material — cardboard boxes, wet garbage, wooden boxes and crates, large drums, old tires, powdery ashes — anything and everything! The rugged, winch-operated packing plate can stand the roughest punishment.

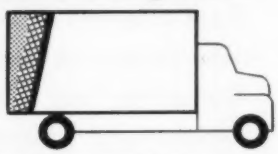
no pre-crushing!

Cardboard, wooden and metal containers are tossed right in the body without pre-crushing. Traveling bulkhead packer plate exerts tremendous crushing force at three points — top and two lower corners — to assure full use of engine power for *complete* compaction.

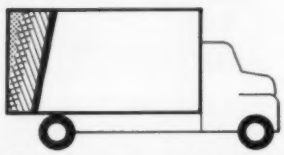
POWERFUL PROGRESSIVE COMPACTION handles <u>all</u> "hard-to-pack" loads



During first packing cycle material is compacted under force of about 1,000 lbs. per sq. ft.



Loadings for second cycle are compacted under same force while first load receives another thorough compaction.



Additional cycles crush new loads with identical potent force — material already compacted is squeezed even more. "Progressive Compaction" means *complete* compaction of the *entire* load.

Ask for a Demonstration! Compare the M-B Packer

MANUFACTURERS OF QUALITY MUNICIPAL AND CONSTRUCTION EQUIPMENT SINCE 1907

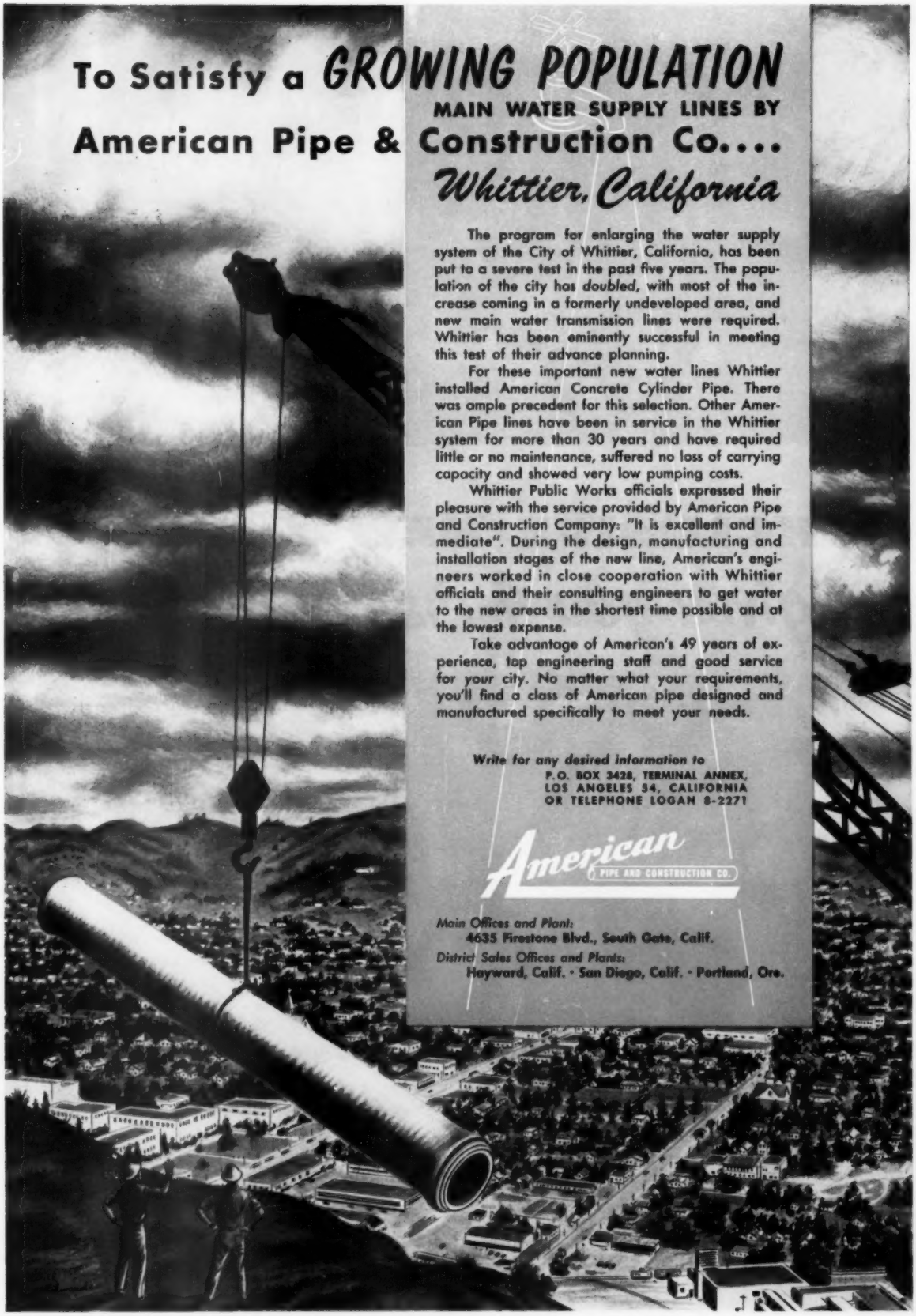
M-B CORPORATION
NEW HOLSTEIN, WIS.

PACKER BODIES

LINE MARKERS

SWEEPERS

PAINTS AND BEADS



To Satisfy a GROWING POPULATION

MAIN WATER SUPPLY LINES BY American Pipe & Construction Co....

Whittier, California

The program for enlarging the water supply system of the City of Whittier, California, has been put to a severe test in the past five years. The population of the city has *doubled*, with most of the increase coming in a formerly undeveloped area, and new main water transmission lines were required. Whittier has been eminently successful in meeting this test of their advance planning.

For these important new water lines Whittier installed American Concrete Cylinder Pipe. There was ample precedent for this selection. Other American Pipe lines have been in service in the Whittier system for more than 30 years and have required little or no maintenance, suffered no loss of carrying capacity and showed very low pumping costs.

Whittier Public Works officials expressed their pleasure with the service provided by American Pipe and Construction Company: "It is excellent and immediate". During the design, manufacturing and installation stages of the new line, American's engineers worked in close cooperation with Whittier officials and their consulting engineers to get water to the new areas in the shortest time possible and at the lowest expense.

Take advantage of American's 49 years of experience, top engineering staff and good service for your city. No matter what your requirements, you'll find a class of American pipe designed and manufactured specifically to meet your needs.

Write for any desired information to
P.O. BOX 3428, TERMINAL ANNEX,
LOS ANGELES 54, CALIFORNIA
OR TELEPHONE LOGAN 8-2271

American PIPE AND CONSTRUCTION CO.

Main Offices and Plant:
4635 Firestone Blvd., South Gate, Calif.

District Sales Offices and Plants:
Hayward, Calif. • San Diego, Calif. • Portland, Ore.

IT'S A **Skid-Shovel**

with Drott's exclusive *triple-power*, pry-over-shoe break-out action—plus 42° ground-level bucket roll-back! The Skid-Shovel position also gives you speedy straight-forward loading—time-gaining, strain-saving Skid-Shoe load transport!

EXCLUSIVE NEW 2¼-YARD

gives you 4-machine utility ...

IT'S A **Clamshell**

a "wide-opener" that gives you a speedy bucket-fill on stockpiled loose materials, even in cramped quarters. And as a clamshell, the Four-In-One gives you a 30-inch dumping height advantage over ordinary roll-forward bucket dumping.

Move the Four-In-One "machine-selector" lever with finger-tip ease, and prove *versatility unlimited* . . . get the job-range of a machinery yard full of costly, limited-duty rigs! Test the tremendous excavating power of exclusive pry-over-skid-shoe break-out action. Compare how exclusive shock-swallowing Hydro-Spring speeds production, protects performance. Try this big new 2¼-yard Four-In-One, or the TD-6 one-yard or TD-9 1½-yard model. Ask your nearby International Drott distributor for a demonstration!

IT'S A
Bullclam

with famous Drott Bullclam Shovel efficiency on all Sanitary Landfill operations—*plus* unequalled ability to *strip, grade,* and *spread,* using clam lip control. And as a Bullclam, the Four-In-One can *self-load* like a carry-type scraper!

TD-14 FOUR-IN-ONE
for one moderate investment!

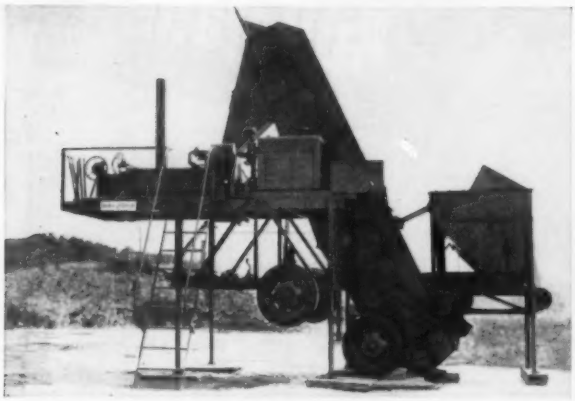
IT'S A
Bulldozer

with clam open in bulldozing position, the big-capacity earth-rolling blade has cutting edge and shoes on the ground. You regulate depth of cut with ease and accuracy by hydraulic "radius control" of blade pitch (forward and backward).

International Harvester Company, Chicago 1, Illinois

INTERNATIONAL® DROTT

Start with an asphalt plant that can grow with your business



Begin with a mixer, elevator and hopper, and you're set to produce stabilized and cold bituminous mixes at capacities of more than 50 t.p.h. For a low initial investment, the Barber-Greene 840-B gives you big plant features and flexibility.

Later add a dryer to produce hot mixes (to 45 t.p.h.) suitable for nearly every type of paving job. With an aggregate feeder to control cold feed gradation, the complete range of hot mixes can be produced—except specs requiring screening after drying.

For high type mixes, expand operations with a gradation unit to produce mixes (to 45 t.p.h.) to meet any specification. A complete line of dust collectors, cold feeders, mineral feeders is available to meet all of your requirements.

Get big plant features with the low cost Model 840-B. A new, longer twin shaft pugmill, hydraulically operated pugmill discharge hopper, interlocked proportioning, speedy setup, unexcelled portability—all provide more production and profit.

56-5A

Now . . . check into this big money maker. Write for literature

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

What's Your Problem?

If you need information on any type of municipal service or equipment, these reply cards will get action in a hurry.

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THE AMERICAN CITY MAGAZINE

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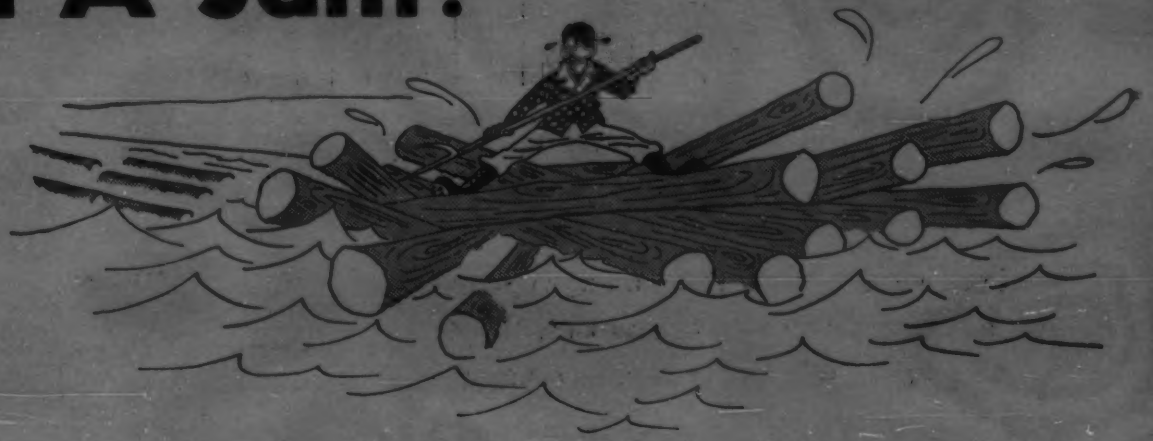

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235	241	247	253	259	265	271	277	283	289	295	301	307
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Complete
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PROTECTION
When you buy Progressive
AMERICAN METERS
Water Departments that buy American Frost Bottom Meters have no worries. They know that the breaking pressure of the bottom has been predetermined at the factory and since it breaks by tension and not by shearing it is unaffected by flange bolt tightness. Breaking of bottom permits all internal parts including gear train parts to separate without damage. A new inexpensive Frost Bottom can be attached in a few minutes. It's as simple as that. So, let freezing weather come. You haven't a worry when you buy American!
BUFFALO METER CO.
2902 Main Street, Buffalo 14, N. Y.

CATERPILLAR

HOW WATERLOO TURNED GARBAGE DISPOSAL FROM A LIABILITY INTO AN ASSET

Playgrounds reclaimed from dumps, property values increased near homes and a polluted creek filled—these are some of the benefits resulting from nine years of sanitary landfill.

When Waterloo, Iowa, was using the open dump system of garbage disposal, the Mayor often received requests like this: "We're having a party tonight, Mayor. Could you stop burning rubbish at the dump?" Worst of all, the city fathers were constantly worried about possible lawsuits brought about by the unsightly, unsanitary dumps, which were breeding places for rats, flies and vermin.

Many people accepted this condition as a necessary evil. But not Carl C. Fagerlind, Waterloo Street Commissioner, who proposed the sanitary landfill method of disposal. He explained this in terms taxpayers could understand. "You just find a low area and dump your garbage there. You spread the refuse out, then run over it with one of those big crawler tractors. This squashes everything together, then you cover the refuse with about two feet of dirt. Flies or rats can't get to the refuse and it can't burn.

"The real payoff comes afterward, though. You keep piling layers of dirt and garbage into the low spot, and when it is filled you've got brand-new land for buildings or a park."

The city fathers thought the idea had merit. They told Fagerlind to "Take one of the city's tractors and see what we can do at our present dumping site. We can't spring this on the city until we are sure we know how to operate a successful landfill."

After Fagerlind had convinced them that he had the know-how, the next step was to promote sanitary landfill to other city officials, the park board, the planning commission and influential

Carl Fagerlind, Waterloo Street Commissioner, was the prime mover in the city's adoption of sanitary landfill. About 20 acres of land have been reclaimed since the operation started in 1947.

Turning a dump into a baseball diamond is just one example of the improvements made in Waterloo by use of sanitary landfill. A few feet under this field are tons of garbage.

Waterloo business leaders. The Mayor, actively supporting his Street Commissioner, carried his proposal in a series of talks to service clubs, to the League of Women Voters and the press. Finally, the City Council felt the story had reached enough people and Fagerlind was instructed to go to work on his first project, the Fairview Dump.

This dump, next to beautiful Cedar Rapid Park and just a short distance from the municipal baseball stadium, was overrun with rats. Fires burned night and day and baseball games were frequently interrupted when the outfielders could not see through the fog of smoke that drifted over the field.

Using the landfill method, Fagerlind and his crews converted this public nuisance into a playground. So successful was the conversion that people from

This Caterpillar* D7 Tractor with No. 7S Bulldozer is the mainstay of Waterloo's sanitary landfill operation. Its giant tracks can squeeze refuse to one-fourth of its original size. Good compaction is essential in landfill. This, plus solid packing of earth over the refuse, eliminates vermin and odors and prevents fires. Eventually, grass seed is sown and the area becomes a community asset.

all sections of the city offered him other sites for reclamation. As a result, among other improvements in the last nine years, there's a dike along the Cedar River that protects about 20 square blocks of a residential neighborhood. This was constructed at a saving of from $4000 to $5000 to taxpayers. And an old mill race that cut through another residential section has been filled.

"We worked within 50 feet of residences, but people didn't mind," Fagerlind said. "They felt that while the fill was going in, it was no worse than looking at the gaping 100- to 150-foot trench that sliced through their properties. They thought of the increased property value that would result when the job was finished."

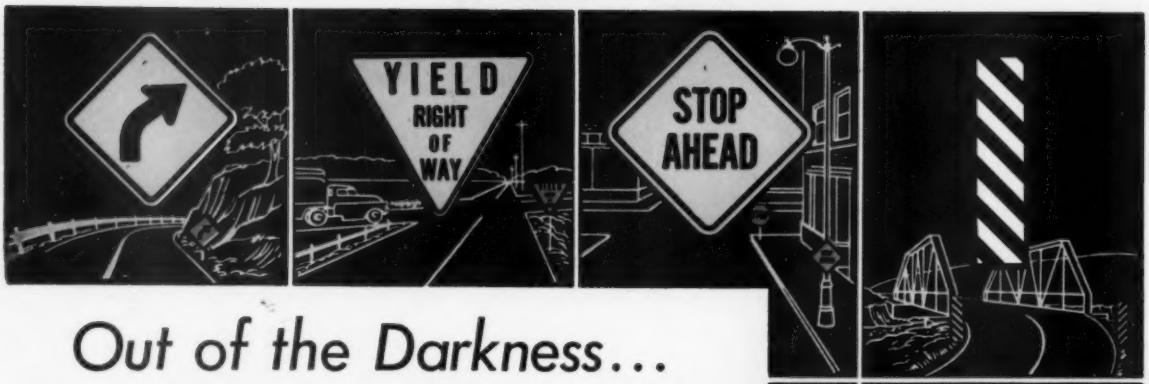
Compaction, Fagerlind feels, is the key to successful landfill. It is necessary to have a good heavy tractor that will crush cartons, tin cans and bottles and thoroughly tamp the refuse before the cover is put on. This eliminates the vermin and reduces the degree of future settling of the land.

Work horse in Waterloo's sanitary landfill program is a CAT* D7 Tractor with No. 7S Bulldozer. Says Fagerlind: "Its cost of operation is very, very low and it does a wonderful job. We had over 4000 hours on it before any major expense was met. And very important, it has the weight for proper sanitary landfill."

Practical information on sanitary landfill, as well as the function of Caterpillar-built equipment in the method, is available from your nearby Caterpillar Dealer. A phone call, card or letter to him will get prompt attention.

Under the landfill method, land can be reclaimed close to homes, increasing property values. The refuse is covered each night under a compacted blanket of earth, so rats and flies can't breed in it and it can't burn.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS, U. S. A. *Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.



Out of the Darkness...

STRONG · BRIGHT · CLEAR

GROTELITE *REFLECTIVE SHEETING!*

Grotelite SS Sheds Water Like A Duck's Back!

Before You Place Another Order For Reflective Material, Shouldn't You Examine These Facts on Grotelite SS!

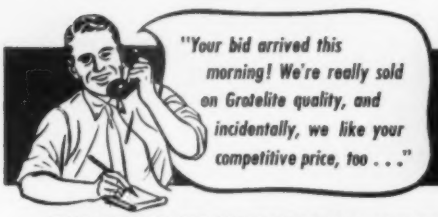
1. Outstanding Target Value!
2. Rugged, Smooth Surface!
3. Entirely Weatherproof!
4. Important Savings!
5. Extra Years of Reflective Service!

Through the dangers of the night, in rain, snow or sleet, Grotelite Reflectorized Signs shine out with long-range brilliance and clearness. Grotelite SS is entirely water-proof and weather-proof . . . self-cleans in the rain. It withstands extremes of temperature and humidity, remains in excellent condition after years of service. Whether headlights are bright or dimmed, this improved reflective sheeting insures maximum sign-to-car warning . . . in *any* weather!

GROTELITE GIVES THE MOTORIST TIME TO BE SAFE!

Today's highspeed traffic requires long-range reflectivity. It's too late to be safe, after the car reaches the sign. Grotelite provides maximum warning where it counts . . . at the greatest distance from the point of danger!

Send Today for Catalog No. 754-T . . . and for Complete Facts!


"Your bid arrived this morning! We're really sold on Grotelite quality, and incidentally, we like your competitive price, too . . ."

THE GROTE MANUFACTURING COMPANY, INC. • Established 1901 • Bellevue, Kentucky • Opposite Cincinnati

Burroughs Sensimatic offers all the accounting speed and versatility you need!

Burroughs Sensimatic Accounting Machine. Its low cost will surprise you . . . especially since it offers so many time- and work-saving features. It cuts your day-to-day accounting costs right to the bone!

In fact, no other accounting machine is as fast and versatile as a Sensimatic. That's because no other machine has a four-jobs-in-one control panel that *automatically* directs a Sensimatic through every *general accounting* and *budgetary control* operation.

Your operator simply indexes the right amounts on the keyboard . . . taps the proper motor bar. The control unit does the rest! And because this panel and many other automatic features of the Sensimatic reduce manual operations and decisions, your operators become fast-working experts in much less time than it ordinarily takes just to train them.

Your records? You'll find a Sensimatic prepares *all* your records neatly, accurately . . . in the shortest time possible. Doesn't a Sensimatic fit in with your plans for building confidence in your administration? One demonstration will convince you! Call our nearest branch office . . . or write: Burroughs Corporation, Detroit 32, Michigan.

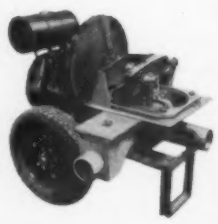
"BURROUGHS" AND "SENSIMATIC" ARE TRADEMARKS

Burroughs

for . . .

Quality
Dependability
Economy
Delivery
Service

DIAPHRAGM PUMPS



MELTING FURNACES

JOINT RUNNERS

CALKING TOOLS

MANHOLE CUSHION

PIPE CUTTERS

SEWER CONNECTIONS

M-SCOPE PIPE FINDER

it's POLLARD

for pipe line equipment

and for Convenience . . .

THE NEW POLLARD CATALOG LISTS HUNDREDS OF MODERN PRODUCTS DESIGNED TO MEET YOUR EVERY REQUIREMENT.

Pollard
Catalog 26

PIPE LINE EQUIPMENT
JOSEPH G. POLLARD CO., INC.
PIPE LINE EQUIPMENT
PIPE LINE EQUIPMENT

Place your next order with POLLARD

If it's from POLLARD . . . It's the Best in Pipe Line Equipment

NEW HYDE PARK • NEW YORK

Branch Offices: 1064 Peoples Gas Building, Chicago, Illinois
333 Candler Building, Atlanta, Georgia

How this hydrant

PAYS A BONUS!

It's unique... it's the B-50-B

EVERY new installation of Darling B-50-B A.W.W.A. Hydrants . . . proves the advantages this new hydrant offers you.

Darling's ball bearing design cuts required operating torque more than 50%—an important factor in *any* system. Action is easy, smooth and sure!

Darling "O" ring seals provide a *dry-top, packless* hydrant, minimizing service and maintenance needs and eliminating the hazard of water reaching the operating threads.

This operating surety and low-cost performance of Darling B-50-B hydrants are bonus values that just can't be matched. You can get the B-50-B design in a wide range of Darling hydrant types to meet your particular installation requirements.

Send for Bulletin 5403

DARLING VALVE & MANUFACTURING CO.
Williamsport 10, Pa.

Manufactured in Canada by
The Canada Valve & Hydrant Co., Ltd., Brantford 7, Ontario.

Now You Can Specify an Armco Pipe to

Meet any Sewer Requirement

For Highest Flow Capacity

Armco SMOOTH-FLO Sewer Pipe with a special bituminous lining that completely fills and covers the strength-giving corrugations. Provides a smooth, efficient interior.

For Corrosion Resistance

Various types of Armco Pipe provide the material durability you need. Plain galvanized for normal service, asphalt coated for added protection, and for the most severe corrosion service you can get the protection of Armco ASBESTOS-BONDED. This has a layer of asbestos fibers embedded into the zinc coating and sealed with a special saturant.

For Erosion Resistance

Armco PAVED-INVERT Pipe with a tough bituminous pavement in the lower quarter—where the wear is most severe. This provides balanced design for extra service life.

For Strength and Waterway Area

You can specify exactly what you need from the wide range of gages and sizes of Armco Corrugated Metal Pipe.

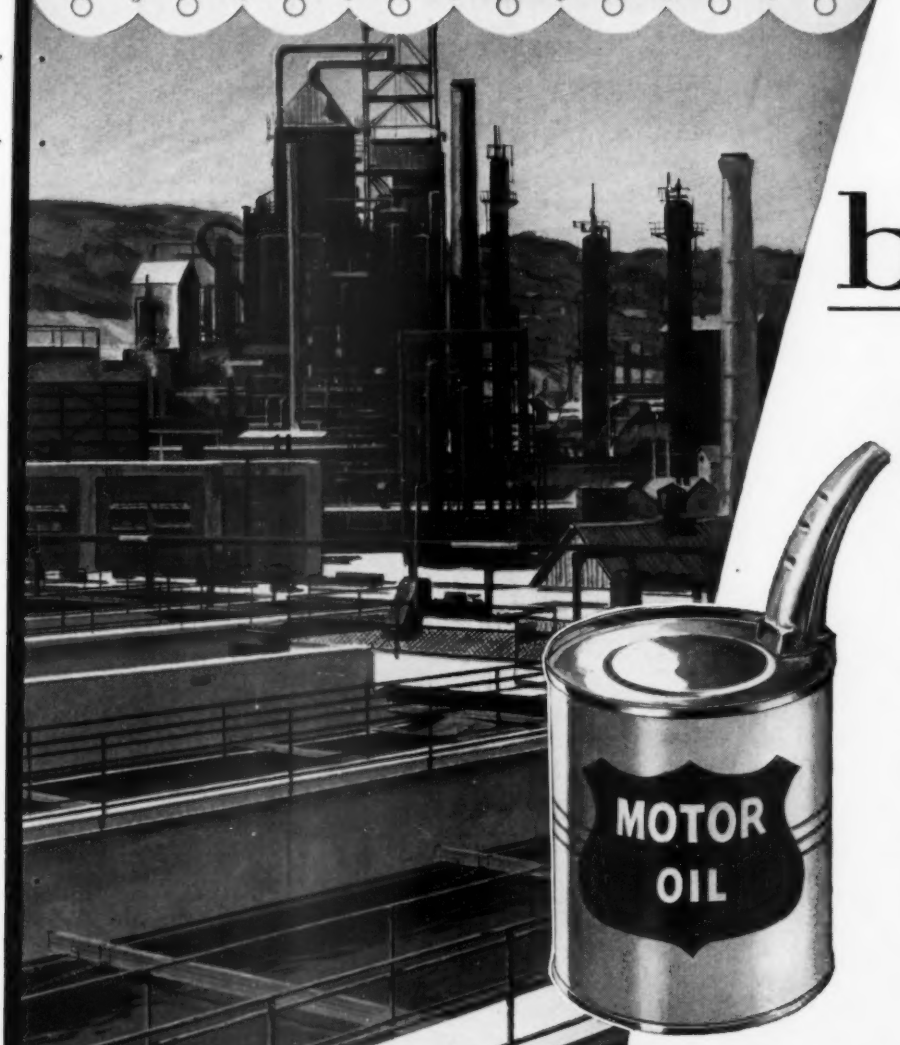
Write us for specific data on Armco Sewer Structures. There is one to meet every service condition. Armco Drainage & Metal Products, Inc., 3246 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO SEWER PIPE

ARMCO

Water is vital...

Badger meters conserve it better!

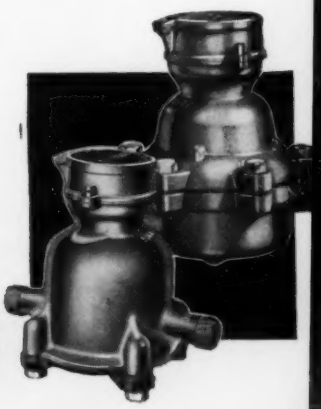


THEY say oil and water do not mix — yet the oil industry uses more than 1600 billion gallons of water annually for refining petroleum. And *nearly 40% of the water used is furnished by public water systems.*

To pinpoint this tremendous volume—more than 4 gallons of water are used in the production of one quart of oil for your automobile.

The Badger water meters used throughout the nation help conserve water for this need . . . just as they do for hundreds of other essential industries and for vital home usage. They measure water accurately . . . provide a precise check on water consumption and waste . . . serving communities by helping make water departments more efficient and self-supporting.

As the experience of waterworks men everywhere shows, Badger meters do the job dependably . . . are a sound investment that pays dividends year after year.



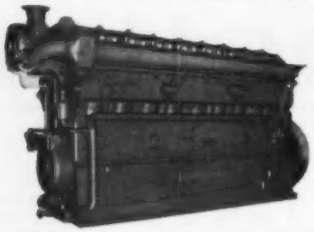
Badger Water Meters

Badger Meter Mfg. Co.
Milwaukee 45, Wisconsin

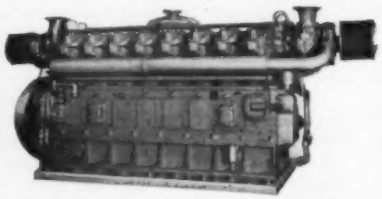
"Measuring the water of the world for 50 years"

TOP PERFORMING Cooper-Bessemers
for every heavy-duty power and compressor need

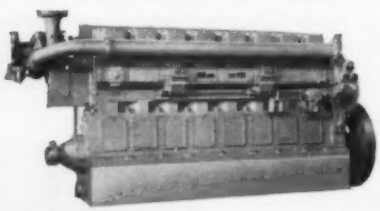
TYPE LSV .....12 or 16 cyl.
Atmospheric and Supercharged
Gas..... 1440 to 5000 hp.
Diesel and Gas-Diesel..1650 to 5000 hp.



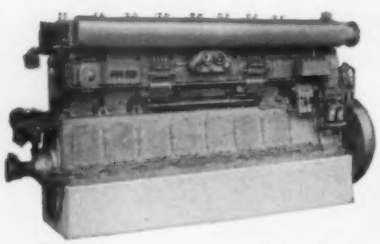
TYPE LS.....6, 7, 8 cyl.
Atmospheric and Supercharged
Gas ..... 660 to 2500 hp.
Diesel and Gas-Diesel.. 965 to 2500 hp.



TYPE FVA..... 6, 8, 12 or 16 cyl.
Diesel — Atmospheric .....310 to 835 hp.
Diesel — Supercharged ...560 to 2200 hp.



TYPE JS.....5, 6, 7 or 8 cyl.
Atmospheric and Supercharged
Gas .....325 to 1815 hp.
Diesel and Gas-Diesel....430 to 1815 hp.



TYPE GS..... 5, 6 or 8 cyl.
Atmospheric and Supercharged
Gas .....320 to 1460 hp.
Diesel and Gas Diesel....300 to 1460 hp.

● Available in a range of sizes from 100 to 5000 hp., Cooper-Bessemer engines and compressors are ready to meet *your exact requirements.*

The standard units shown here are typical of the many "top performers" now offered by Cooper-Bessemer. With "Tri Fuel" operation of most 4-cycle engines, and a new line of centrifugal compressors, Cooper-Bessemer continues to put into practice its policy of "Another Example of Efficient Power at Lower Cost".

Here, to list but a few, are plus values that make *every* Cooper-Bessemer a natural choice when it comes to purchasing new engines or compressors . . . low-cost operation, unmatched efficiency, extreme compactness, long-life dependability, easy accessibility, minimum maintenance and more than a century of engine building experience.

New bulletins offer the latest information. Get your copy by writing: The Cooper-Bessemer Corporation, Mt. Vernon, O.

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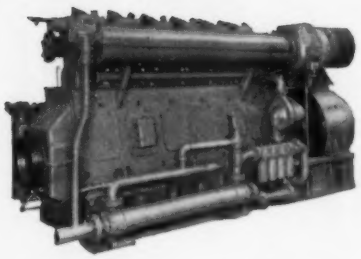
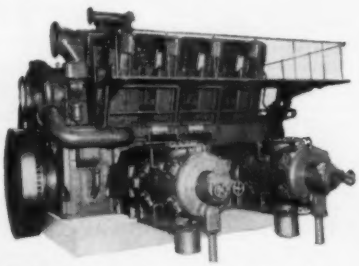
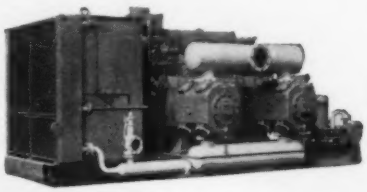


TYPE FWA .....6 cyl.
Diesel — Atmospheric ...245 to 500 hp.
Diesel — Supercharged .420 to 835 hp.

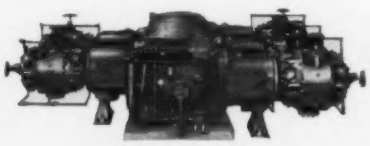
TYPE GMWA.....6, 8 or 10 cyl.
Gas Engine Driven Compressors
.....1500 to 2500 hp.



TYPE GMVA ..... 4, 6, 8, 10 cyl.
Gas Engine Driven Compressors
.....540 to 1350 hp.



TYPE GMXD .....4, 6, 8 or 10 cyl.
Packaged Unit
Gas Engine Driven Compressor . 265 to 660 hp.



M-LINE RECIPROCATING COMPRESSORS
100 to 5000 hp. 9"-14" stroke
Speed to 514 RPM

It pays to

"CONCENTRATE" FOR ECONOMY

...with SINGLE and DUBL-DUALS

It's easy to see why DUBL-DUALS are the "fair-haired" meters in town after town.

First, installation requirements are practically cut in half!

Secondly, combined with a few SINGLE Duals, they'll meet *any* spacing requirement.

Finally, and mighty important too, each DUBL-DUAL has two completely independent mechanisms, identical and *interchangeable* with the SINGLE Dual mechanisms that have never been equalled for quality, performance and life!

For helpful, informative bulletins on SINGLE or DUBL-DUALS, for on-street or off-street parking, write today to *The Dual Parking Meter Company* (Subsidiary of The Union Metal Manufacturing Company), *Canton 2, Ohio.*

For extra value get **DUAL PARKING METERS**

THE BIG WHEELS HAVE IT!

YAZOO MASTER MOWERS

Self-Propelled Rotary, Model 6C66-27, Equipped for Riding Sulky

Here's the power mower acclaimed by municipalities, cemeteries, commercial users throughout the nation! Yes, the Big Wheel Yazoo gives unexcelled performance. Guarantees longer service with harder use—at lower maintenance cost! The Yazoo has big bicycle wheels for smooth, easy maneuverability . . . greater safety . . . the record speed you want in cutting grass and weeds. New features include: safety guards, improved clutch control for complete operator control at all times. Available in 20", 24" and 27" swaths; 2 to 6 hp engines.

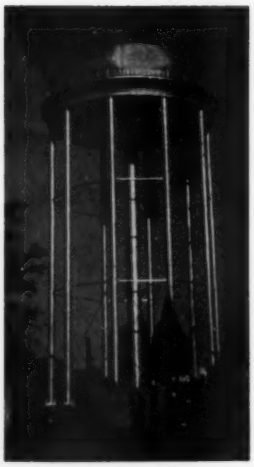
Wherever there's grass to cut
Yazoo BIG WHEELS do the job best!

Yazoo MASTER MOWER

WRITE, WIRE OR CALL TODAY FOR CATALOG, PRICES COMPLETE INFORMATION!

YAZOO MANUFACTURING COMPANY
3607 Livingston Road
Phone 6-6421
Jackson, Mississippi

A CENTURY OF EXPERIENCE IN TANK DESIGN



● Established in 1854, COLE elevated tanks have provided a dependable water supply for mills and communities.

COLE quality is assured by careful, experienced designing and watchful supervision from blueprint to finished tank.

Send us your inquiries for tanks from 5,000 to 2,000,000 gallons—stating capacity, height to bottom, and location.

● Write for latest Cole catalog—*Tank Talk.* ●

R. D. COLE Manufacturing Co., Newnan, Ga.

- TANKS
- TOWERS
- CYLINDERS
- VESSELS
- STANDPIPES

STREETS AREN'T SECRET

At Oak Ridge, Tennessee the United States Atomic Energy Commission conducts research into the mysteries of atomic energy. Necessarily, much of its hard won scientific knowledge is secret. But not so the streets of this government built community. These are clearly marked so all may see, with ***FERRO*** signs.

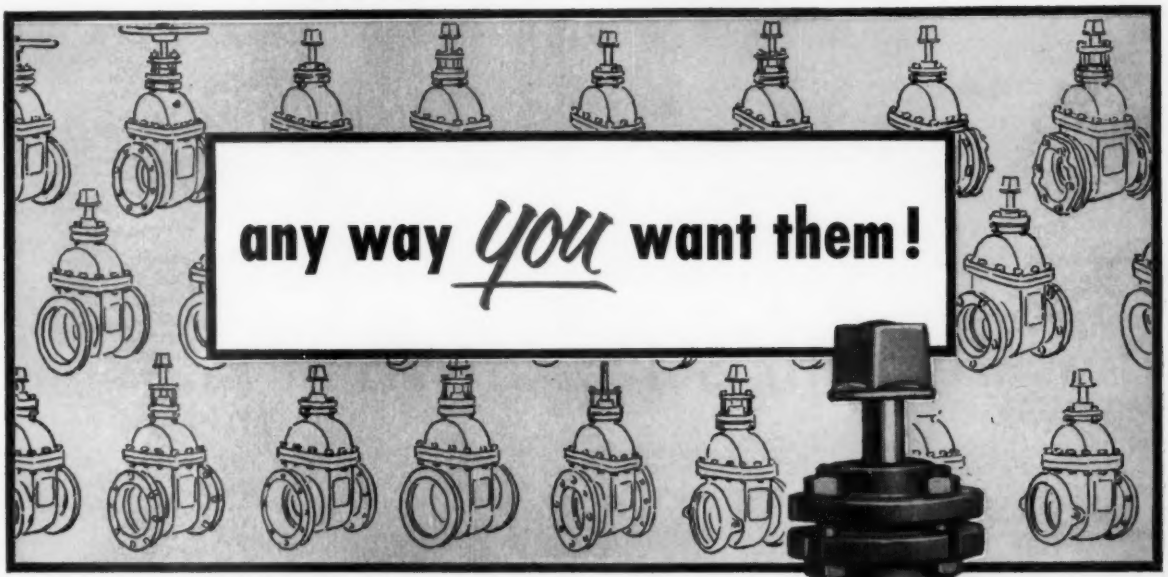
In many interesting locations you'll find ***FERRO*** signs . . . visible day or night; permanent porcelain enamel fused on finest steel.

On any street, road or highway, ***FERRO is the sign of good government.*** For full details, write:

FERRO ENAMELING CO.
1100 Fifty-Seventh Avenue — Oakland 21, California

MUELLER®

GATE VALVES



O. S. & Y. or non-rising stem

Outside screw and yoke (O.S.&Y.) or non-rising stem gate valves can be furnished with bevel gears for horizontal installation or spur gears for vertical installation.

"O" ring or conventional stem packing

Two "O" rings, one located above the thrust collar and the other below the thrust collar provide a positive seal against leakage around the stem. The higher the pressure, the greater their sealing force. Lubricant, sealed between "O" rings keeps thrust collar permanently lubricated.

Conventional packing is kept tight with packing gland flange adjusting bolts. Valve can be repacked without removing packing gland.

Choice of ends

A wide selection of ends – hub, screwed, flanged, universal, mechanical joint or spigot with many different combinations make the Mueller gate valve adaptable to any main.

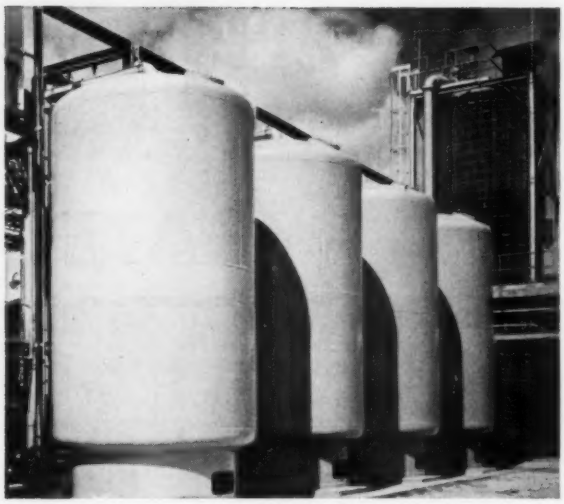
For complete information, consult your W-96 Catalog, your Mueller Representative, or write direct.

MUELLER CO.

Dependable Since 1857

MAIN OFFICE & FACTORY DECATUR, ILLINOIS

ENGINEERING. Permutit engineers work with your staff or your consulting engineers to design all or any part of your water conditioning system.



EQUIPMENT. Permutit supplies complete equipment. Critical parts such as valves, chemical feeders and controls are designed and made by Permutit.

How Permutit® Solves a Water Problem

Growing U. S. cities and towns are faced with using lower-grade water. Results: increased hardness, turbidity, iron, high CO_2 "aggressive waters", other problems . . . complaints from homeowners, businesses, industries.

• **For expert answers** more and more waterworks officials and their consultants are buying the complete service offered by leading water-conditioning firms. Here's how Permutit (rhymes with "compute it"), a pioneer and largest in the field, tackles a water problem:

• **Water analysis,** study of the problem and past experience provide data on possible methods of treatment. The process offering the best balance of initial and operating cost vs. desired quality of treated water is selected.

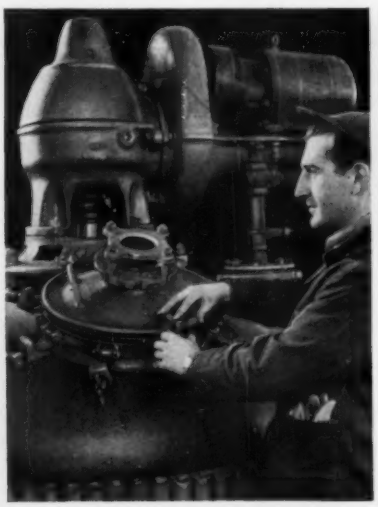
• **Complete proposal** by Permutit engineers covers type, size and capacity of equipment, price, any special engineering services and performance guarantees.

• **Manufacturing** – After the proposal is accepted, Permutit designs the entire project, schedules assembly and shipping. Critical parts, ion exchange resins, control panels are all made in Permutit plants. (No other U. S. firm makes all these components.)

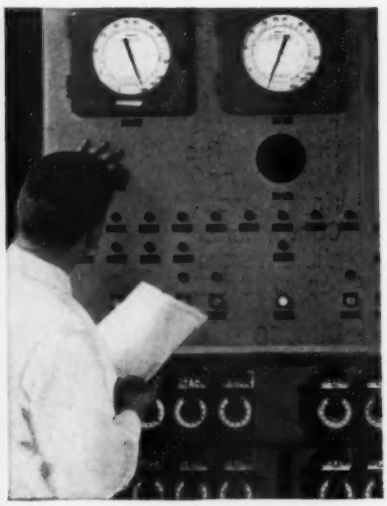
• **Test runs** – Where required, Permutit checks the installation, supervises start-up and initial operation, trains permanent operating personnel.

• **For further information** look up the Permutit office in your city or write to The Permutit Company, Dept. AC-2, 330 West 42nd St., New York 36, N. Y.

WATER ANALYSIS. Permutit's modern water-analysis laboratory tests over 1200 samples a month!



ION EXCHANGE RESINS. Permutit makes its own ion exchange resins, natural and synthetic zeolites.



AUTOMATIC CONTROLS to ensure optimum results are designed, assembled, wired and tested by Permutit.

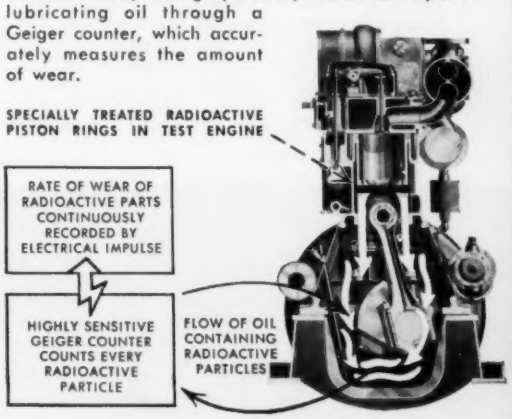
Putting atoms to work for longer engine life

ENTERPRISE BUILDS MORE DUTY INTO HEAVY-DUTY ENGINES

—Through radioactive testing and research

Discovering the secrets of engine wear – building more life into engine parts... these are challenges constantly put to the research staff at Enterprise laboratories. And today – thanks to the scientific application of radioactive testing – many of the mysteries of what happens inside an engine – of how and why parts wear, are being solved. Because of tests like these, new concepts have come to bear in diesel engineering – in metallurgy, piston design, operating speeds, types of fuel and lubricating oil, and many other phases. The results? More work from Enterprise Engines at less cost, with longer engine life than ever before. For the best in diesel, dual fuel, tri fuel and spark ignited gas engines, specify Enterprise – for 35 years the quality leader.

In Radioactive tests, engine parts such as piston rings are first irradiated in an atomic pile, then put in an Enterprise test engine. Any radioactive particles which are worn away during operation, are carried by the lubricating oil through a Geiger counter, which accurately measures the amount of wear.


SPECIALLY TREATED RADIOACTIVE PISTON RINGS IN TEST ENGINE
RATE OF WEAR OF RADIOACTIVE PARTS CONTINUOUSLY RECORDED BY ELECTRICAL IMPULSE
HIGHLY SENSITIVE GEIGER COUNTER COUNTS EVERY RADIOACTIVE PARTICLE
FLOW OF OIL CONTAINING RADIOACTIVE PARTICLES

Over a million horsepower at work the world over!

ENTERPRISE
dependable **ENGINES**

ENTERPRISE ENGINE & MACHINERY CO.
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18th and Florida Streets, San Francisco 10, California
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Boston • Chicago • Denver • Jacksonville • Kansas City • Los Angeles • Minneapolis • New Orleans • New York • San Diego • Seattle • St. Louis • Washington, D.C.

How to CUT CLEARING COSTS

To help you clear land faster and cheaper, here are NEW IDEAS developed by clearing specialist Wade Lahar Construction Co. These "tricks" will help Lahar and their 22 International tractors finish a 23,500-acre job at Buford Dam 7 months ahead of an 18-month schedule.

One pass levels 18-inch trees—Where clearing to ground level is your primary job, Contractor Lahar recommends a big International tractor and V-shaped cutter. The cutter shown was designed and built by Herman Hackler, project manager, at Lahar's home plant in Mountain Home, Arkansas. Four 200 hp International TD-24's, so equipped, are handling most of the Buford Dam reservoir clearing near Atlanta, Georgia. In typical operation, they cut over so much land that 18 other International tractors are

1-to-5 slopes, 1,300 acres per month—Your TD-24 will efficiently clear trees from steep grades as well as from level ground. Here's what Herman Hackler, project manager for Lahar on the $1,611,560 contract, says about this big 200 hp, 8 mph crawler: "TD-24's high-low steering range keeps cutter against the tree until it falls, even on steepest slopes. This factor, plus the "24's" great power, excellent traction, and over-all balance, is letting us crawler-cut 99% of our Buford Dam job, despite slopes averaging 1-to-5, and, in some places, 1-to-4. Our fleet of *22 International tractors*—11 TD-24's (four of them with cutters), six TD-18's, three TD-14's, and two TD-9's—clears and rakes 1,300 acres per month. This production, in our opinion, could not be exceeded by any other make of tractor!"

Burn, turn with one tractor—On big jobs, Mr. Lahar suggests use of one medium-sized tractor to handle burning of brush piles. This leaves bigger machines free for production work. Note how clear the raked ground is behind tractor. When Lahar's job is done, some 14,000 acres will be completely cleared; about 9,400 acres partly cleared, with some trees left standing in the water to benefit future water life.

Team decking boosts output—Where terrain permits, three to six of Lahar's 22 IH crawlers team to rake and pile the cut brush and trees. This gives two advantages . . . (1) rakes, by catching both ends of fallen trees and brush, pick up material lying between tractors which normally would require separate pass . . . (2) one pass per team is all that's needed to provide a clean swath.

kept busy decking and burning. One pass of their 13-ft long, 14-ft wide blade slices saw-like through brush, pine, and mixed hardwoods up to 18 inches in diameter. For scattered trees up to 12 inches in diameter, a similar though smaller cutter is used on a 66 dhp International TD-14A. Both TD-24 and TD-14 have a canopy of 2 and 2½-inch pipe. This protects operator and machine. Entire canopy and cutter assembly pins to regular A-frame . . . can be quickly detached and interchanged with standard or other special blades.

Blade "saws" larger trees—If your clearing work involves trees larger than 18 inches, here's another idea from Wade Lahar Construction Co. Using same mild-steel cutter blade as on smaller trees, have TD-24 operator "see-saw" back and forth a few times to cut the trunk. Just a few seconds' work with the 64,000-lb TD-24 will topple the tree.

Careful in-the-field maintenance boosts output, too. Left, mechanic uses compressed air to blow dirt and leaves from TD-24 radiator core. Right, special steel tooth, 2½ ft long with 18-inch overhang, is welded to TD-24 blade. Four teeth and top blade extension are used per raking tractor.

Winches logs from swamp—Clearing from marshy areas may present you with quite a problem too. Wade Lahar Construction Co does this work, 1% of their 23,500-acre Corps of Engineer job, with chain saw crews and winch-equipped TD-9 and TD-18 crawlers. After winching in, tractors skid timber to central area.

International

makes every load a pay load

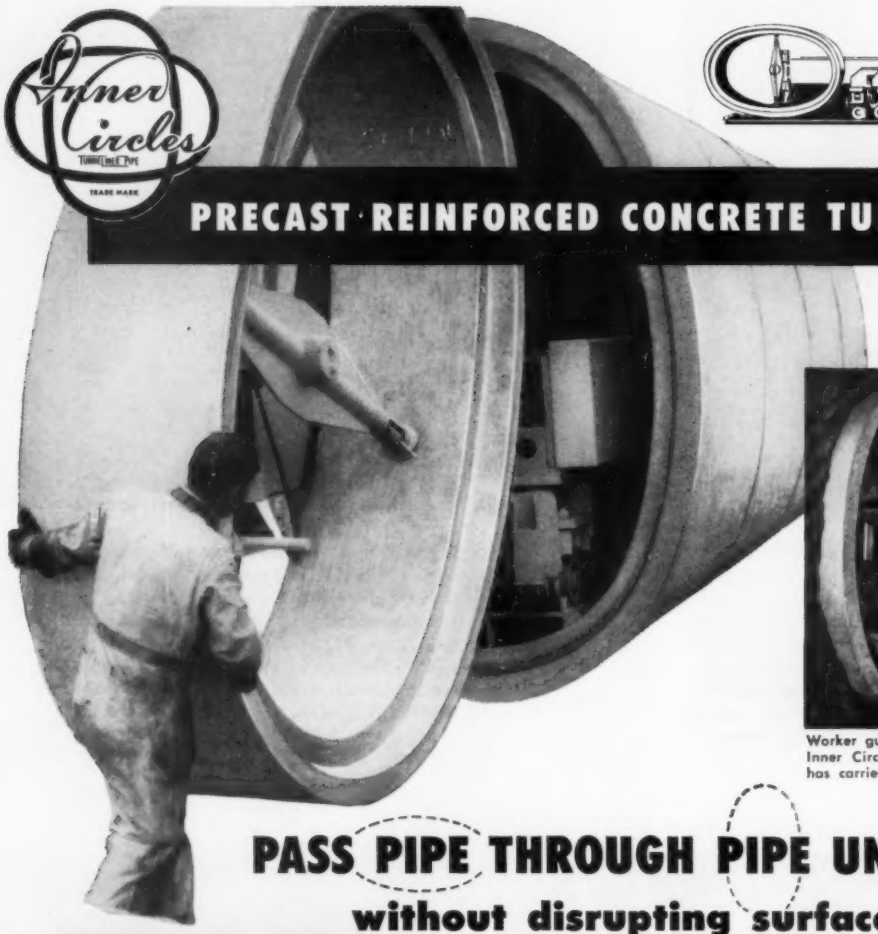
INTERNATIONAL HARVESTER

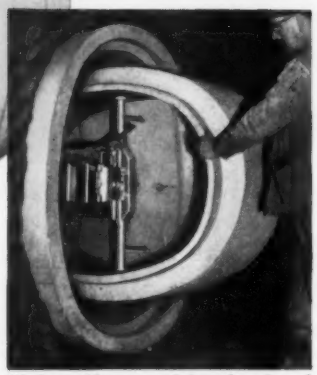
Industrial Power

A machine size for every job . . . see your nearest INTERNATIONAL INDUSTRIAL POWER DISTRIBUTOR for details.

Inner Circles
TUNNELINER PIPE
TRADE MARK

PRECAST · REINFORCED CONCRETE TUNNEL PIPE

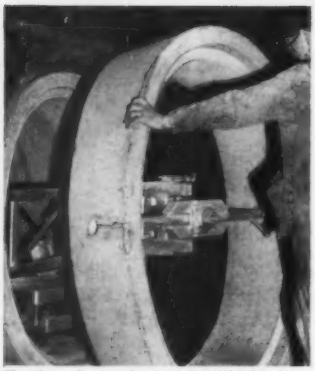




Worker guides an oval-shaped section of Inner Circle pipe which the Tunnelugger has carried through conduit already laid.

PASS PIPE THROUGH PIPE UNDERGROUND

without disrupting surface traffic!



The Tunnelugger backs off with the pipe still on the arms to set it firmly in place, assuring an even, tight joint.

Inner Circles methods using elliptical Tunneliner pipe now make it possible to pass full structural ring, precast, concrete pipe through conduit already laid—even on curves. Surface excavation is eliminated...traffic is undisturbed...work progresses regardless of weather conditions. Less equipment and fewer laborers are required, yet sewers are completed faster at less cost, with pipe strengths *pretested* by commercial laboratory procedures.

The new two-way Tunnelugger can operate in either direction from a centrally located shaft—quickly delivering and positioning Inner Circles at either end while digging continues at the other.

Our technical staff will be pleased to assist you with your pipe problems.

A·M

AMERICAN-MARIETTA COMPANY

CONCRETE PRODUCTS DIVISION

GENERAL OFFICES: AMERICAN-MARIETTA BUILDING, 101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS • PHONE WHITEHALL 4-5600

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Lewistown Pipe Company
Universal Concrete Pipe Co.

Radio serves vital city departments in Fort Worth

Police, Fire, Utilities, and Civil Defense Functions in Fort Worth, Texas Are G-E Radio Equipped.

City departments radio equipped

The City of Fort Worth is an example of modern city government in action. Major city departments are equipped with two-way radio for instant coordination of operations.

Three systems—one tower

Three separate radio systems are controlled from central Radio Division headquarters, beamed from a single antenna tower. Base station dispatch points spotted throughout the city are in contact with other departments and nearly 300 mobile radio vehicles. Additional transmitters are on standby service.

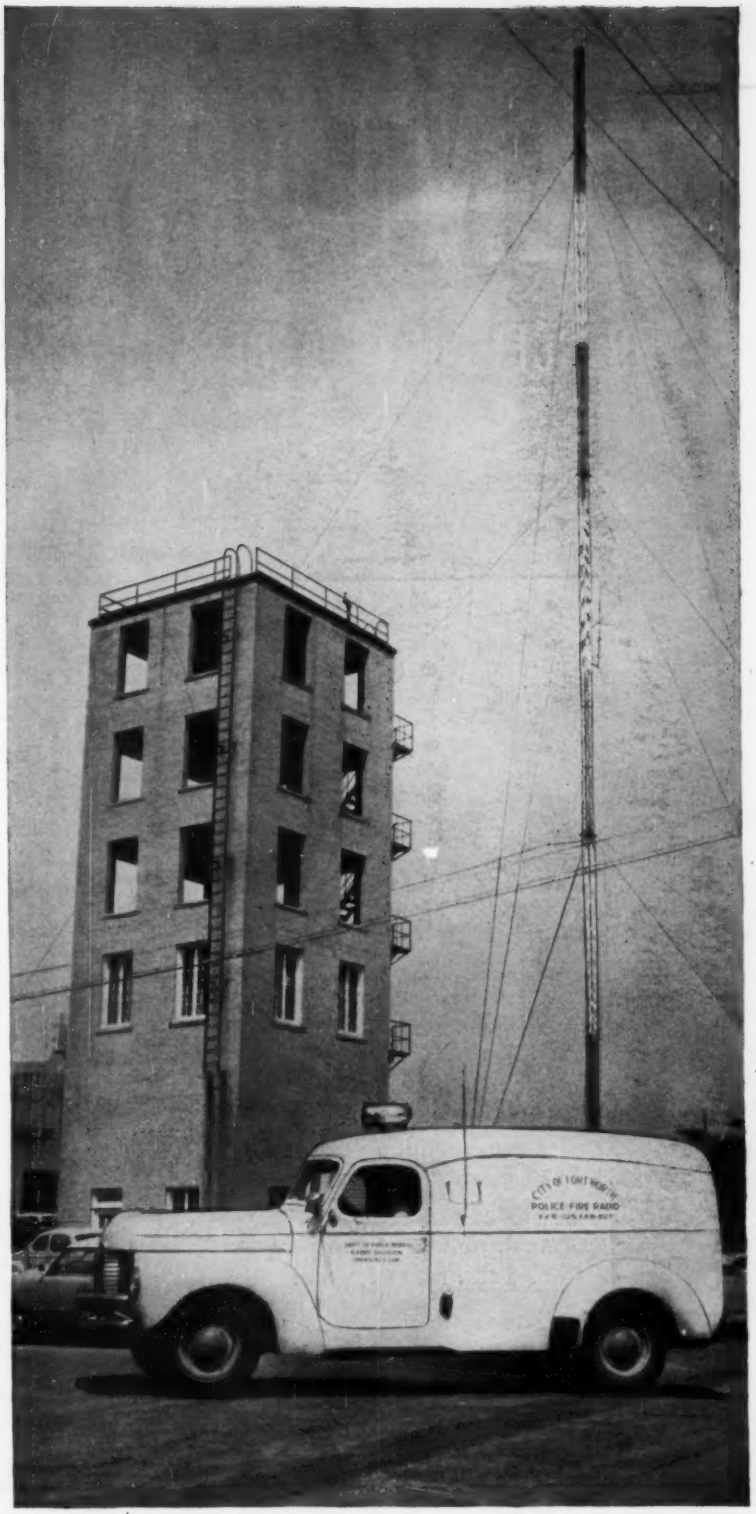
Fort Worth's Radio Division tower also serves as transmission point for radio system of Tarrant County Volunteer Firemen.

Fort Worth's modern Civil Defense communication center, located outside the city, is also equipped with two-way radio to back up and coordinate existing radio systems.

New Progress Line

New Progress Line radio equipment provides rack mounted construction, true plug-in chassis. Exclusive design permits changes in frequency, power, type of reception quickly—at a minimum cost. Let a G-E Communications Counselor analyze your municipality's radio needs, develop an installation based on long range requirements. See him, or write: *General Electric Company, Communication Equipment, Section X1026 Electronics Park, Syracuse, New York.*

2-WAY MOBILE RADIO



18 station transmitters link vital city offices, nearly 300 G-E radio equipped vehicles. Here a Radio Division mobile unit rounds a corner near the Municipal Fire Academy. Antenna tower in background beams separate signals serving all departments.

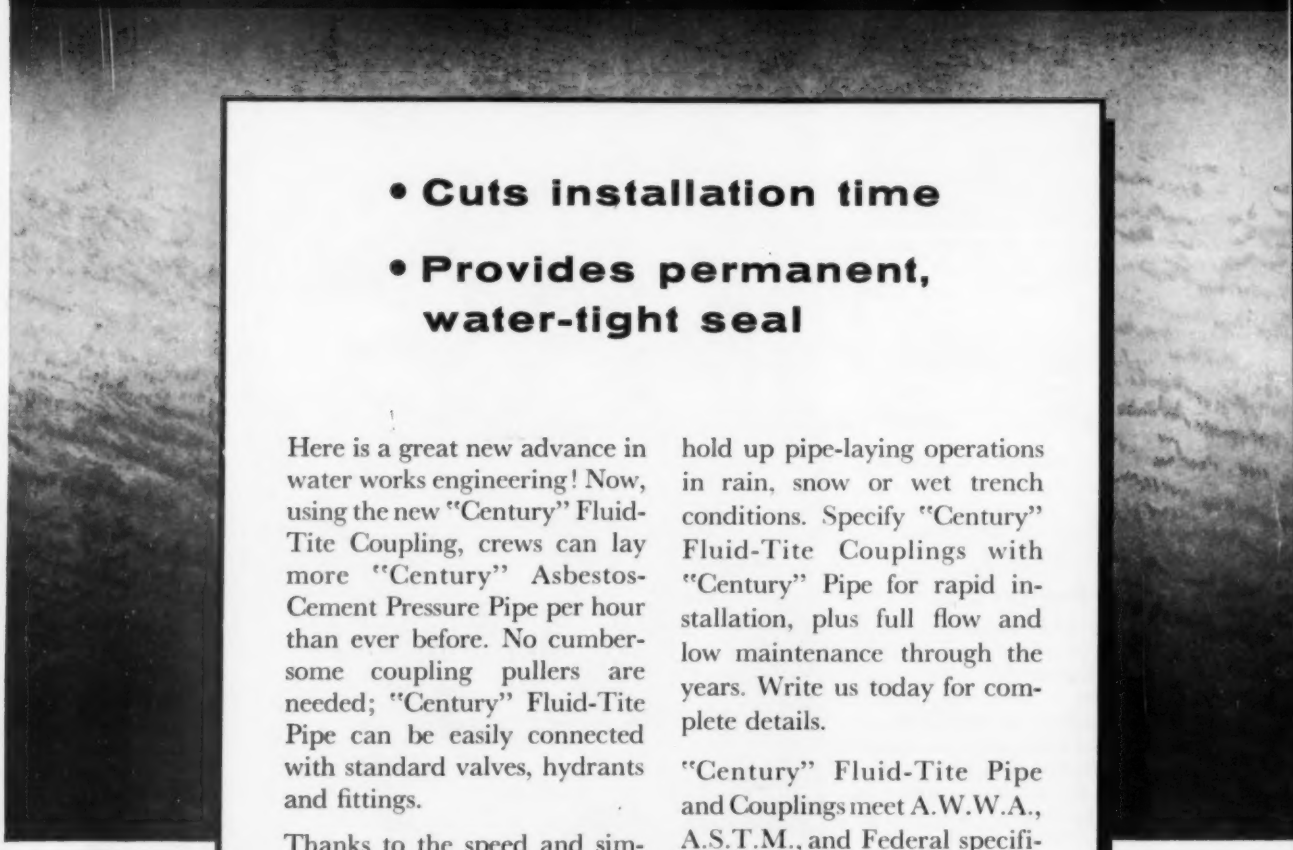
Progress Is Our Most Important Product

GENERAL ELECTRIC

NEW!

"CENTURY" FLUID-

FOR "CENTURY" ASBESTOS-CEMENT PRESSURE PIPE



- **Cuts installation time**
- **Provides permanent, water-tight seal**

Here is a great new advance in water works engineering! Now, using the new "Century" Fluid-Tite Coupling, crews can lay more "Century" Asbestos-Cement Pressure Pipe per hour than ever before. No cumbersome coupling pullers are needed; "Century" Fluid-Tite Pipe can be easily connected with standard valves, hydrants and fittings.

Thanks to the speed and simplicity of using "Fluid-Tite" Couplings, there is no need to hold up pipe-laying operations in rain, snow or wet trench conditions. Specify "Century" Fluid-Tite Couplings with "Century" Pipe for rapid installation, plus full flow and low maintenance through the years. Write us today for complete details.

"Century" Fluid-Tite Pipe and Couplings meet A.W.W.A., A.S.T.M., and Federal specifications, and are approved by Underwriters' Laboratories, Inc.

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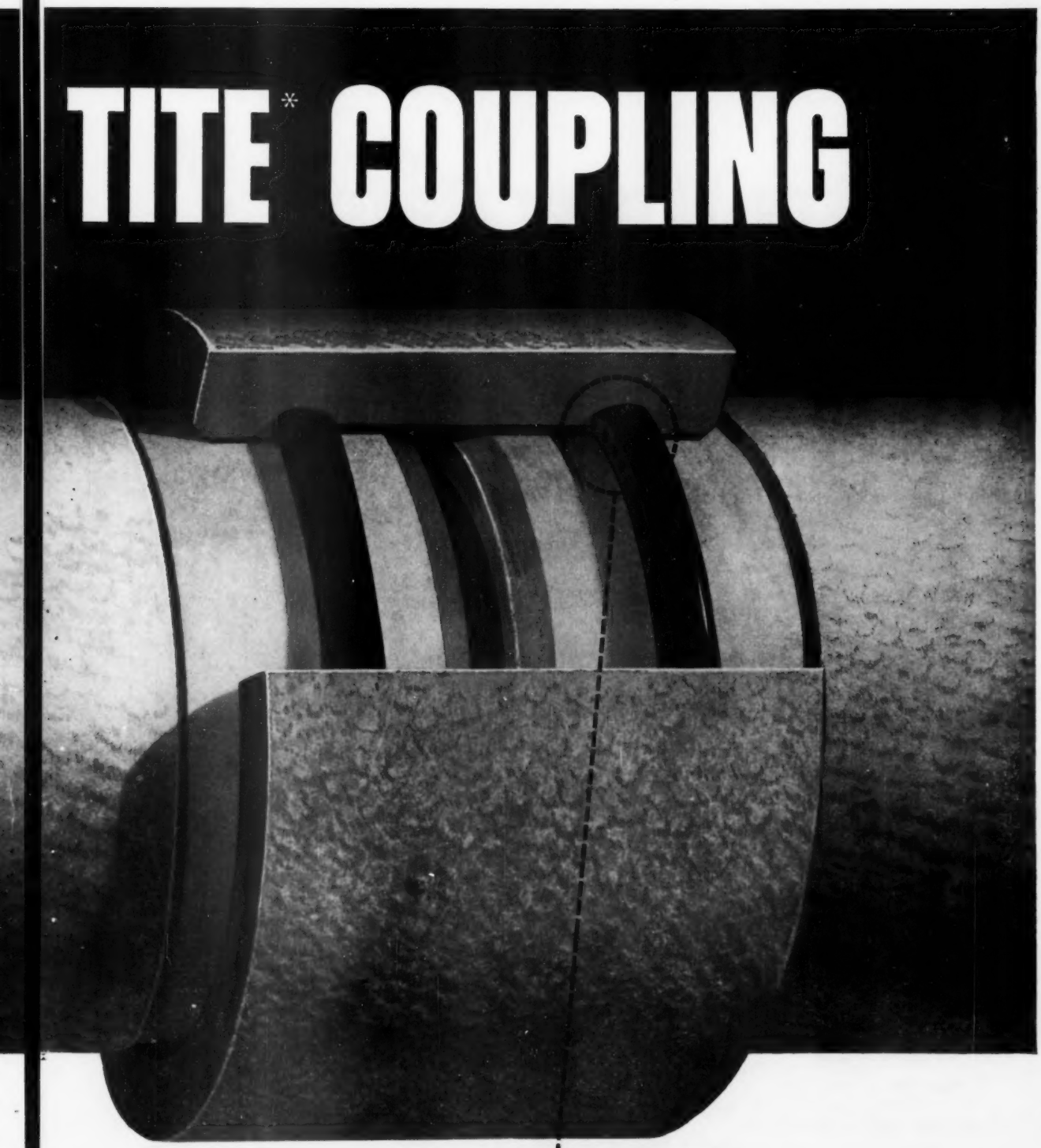
COMPANY • AMBLER • PENNSYLVANIA

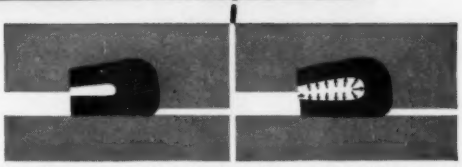
K&M best in asbestos

TITE* COUPLING



SELF-ENERGIZING SEALING RINGS

allow pipe to slide into coupling easily. Water pressure automatically expands the rings. The higher the internal water pressure, the tighter the seal.



New self-energizing "Fluid-Tite" sealing rings have tapered surfaces, and compress, to permit pipe to slide in easily.

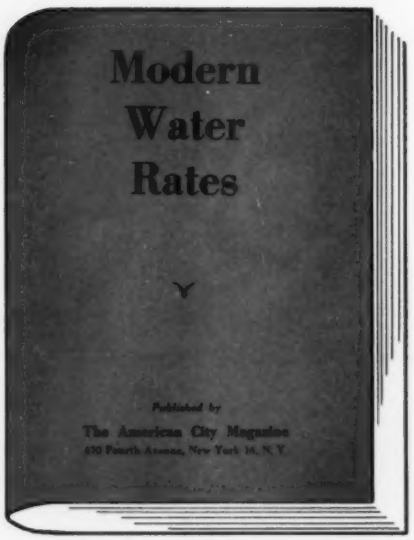
When main is filled, rings expand with application of internal water pressure, creating a tighter seal.

*Ⓟ Patent applied for

Are Water Rates a Problem in Your City?

YOU can find out what other cities are charging for water by purchasing "Modern Water Rates," just published by THE AMERICAN CITY. It provides data on rates used in 130 separate water systems selected from 23 states and covering cities ranging in size from Chicago, Illinois, to Alto, Texas (population 1,007). Of the rates selected, about 12% are used by private water companies and the balance are from public systems of some type.

"Modern Water Rates" can be helpful to you in making recommendations on rate adjustments in your municipality. Order your copy today. You can save $.50 by sending cash, check or postal money order (pay to the order of THE AMERICAN CITY) with the coupon.



To: Circulation Department
THE AMERICAN CITY
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Yes, please send me by return mail .... copies of your "Modern Water Rates" at:

.....$2.50 per copy. My payment is enclosed with this order.

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Name: .....

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8 Specialized All-Truck Models
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If your community is in need of new fire trucks, you can get extra protection when you choose dependable INTERNATIONAL fire truck chassis. **Here's why:**

INTERNATIONAL Trucks give you *specialized* fire fighting units, with *locally-available* parts and service. They are *all-truck built,* with no passenger car engines or components asked to do a fire truck job. They have high horsepower, high torque standard and optional engines that deliver maximum *usable* power where you need it—for fast starts, quick acceleration after turns, full pressure pumping from 300 to 1,500 GPM. They give you extra truck life, extra dependability, save you the BIG money in operation and maintenance.

Whatever your fire protection requirements, INTERNATIONAL Trucks provide the answer in eight specialized chassis—9 engines—many other all-truck models. Ask your INTERNATIONAL Truck Dealer or Branch to give you complete details.

INTERNATIONAL HARVESTER COMPANY • CHICAGO

INTERNATIONAL R-1856 Specialized Fire Truck Chassis, 21,000 lbs. GVW. Front axle rated capacity 5,000 lbs. (7,000 lbs. axle available to give 23,000 lbs. GVW). Rear axle rated capacity 16,000 lbs.

S- and SC-166 (conventional, cab-forward)—131-hp BD-240 or 140-hp BD-264 engine.

S-176—103.5-hp BD-269 or 137-hp BD-282 engine.

S- and SC-186 (conventional, cab-forward)—137-hp BD-282 or 150.4-hp BD-308 engine.

R-1856—165-hp RD-372 or 175-hp RD-406, 182-hp RD-450, 212-hp RD-501 engine.

R-196—165-hp RD-372 or 175-hp RD-406, 182-hp RD-450, 212-hp RD-501 engine.

R-206—175-hp RD-406 or 182-hp RD-450, 212-hp RD-501 engine.

All-Truck Built to save you the BIG money!

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HEAVY-DUTY SALES LEADERS 24 STRAIGHT YEARS!

Motor Trucks • Crawler Tractors • Industrial Power • McCormick® Farm Equipment and Farmall® Tractors

CLEAN SEWERS AT FAR LESS COST

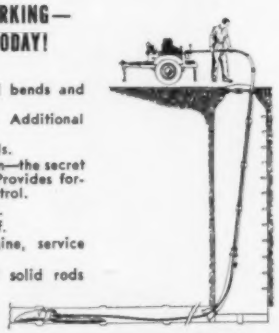
WITH O'Brien sewerking®

POWER CABLE-ROBOT

Here's how you can really save money—no more than 2 men needed to operate an O'BRIEN SEWERKING. And *job time* is cut way down! *ALL POWER OPERATION* is the secret. The SEWERKING employs continuous, flexible steel cable—feeds it with cutting tool into the sewer, rotates for cutting, and recoils it in the storage drum—all by power! No time wasted joining or disconnecting solid rods—less breakage and safer for the operator.

INVESTIGATE SEWERKING—
MAIL COUPON TODAY!

- Flexible cable reaches around bends and traps.
- 250 feet of cable supplied. Additional amounts easily connected.
- Complete line of cutting tools.
- Exclusive OB power transmission—the secret of handling cable efficiently. Provides forward, reverse and neutral control.
- Rotating speeds—75-175 R.P.M.
- Throw-out clutch—for on or off.
- Super powered gasoline engine, service guaranteed.
- Adapter available for use of solid rods when desired.



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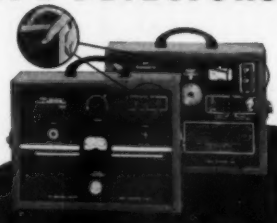
It's True There are Other "Good" PIPE DETECTORS

and EACH ONE WILL PERFORM ALL THESE JOBS:
- Detect, trace and center pipes, cables, etc.
- Estimate their depth
- Separate parallel pipes, cables, etc.



Model 505 Pipe Detector

But... Do They Have ALL These "505" Features

1. ALUMINUM CASE shields the loops from outside interference and is light — durable — repairable.
2. BUILT-IN BATTERY TESTERS plus 67½ V batteries insure maximum service, more efficiency, more power.
3. QUICK-ACTION ALUMINUM HANDLE set up in seconds for one man operation.
4. LIFETIME GUARANTEE assuring reliable performance for the entire life of instrument.

Also Available: Model 505-C Combination Pipe-Leak Detector

Get the complete "505" story — write Dept. 54

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WORTHINGTON-GAMON

LIQUID METERS
All Sizes All Types

WORTHINGTON-GAMON METER DIVISION
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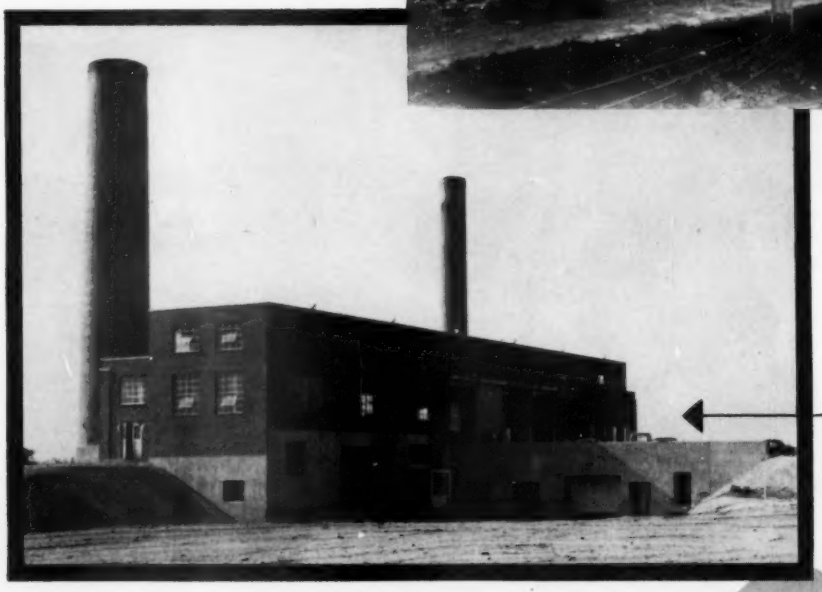
WHAT AN IMPROVEMENT

BEFORE →



← AND AFTER

MODERN REFUSE DISPOSAL at BABYLON, N. Y.

One of Long Island's fast growing towns replaced its inadequate refuse disposal facilities and dump with a modern refuse incinerator plant containing three Morse Boulger circular mechanically stoked incinerator units with mechanical charging and ash handling facilities.

DONALD E. MUNCY
Supervisor

HENRY W. TAYLOR
Consulting Engineer

MORSE BOULGER DESTRUCTOR CO.

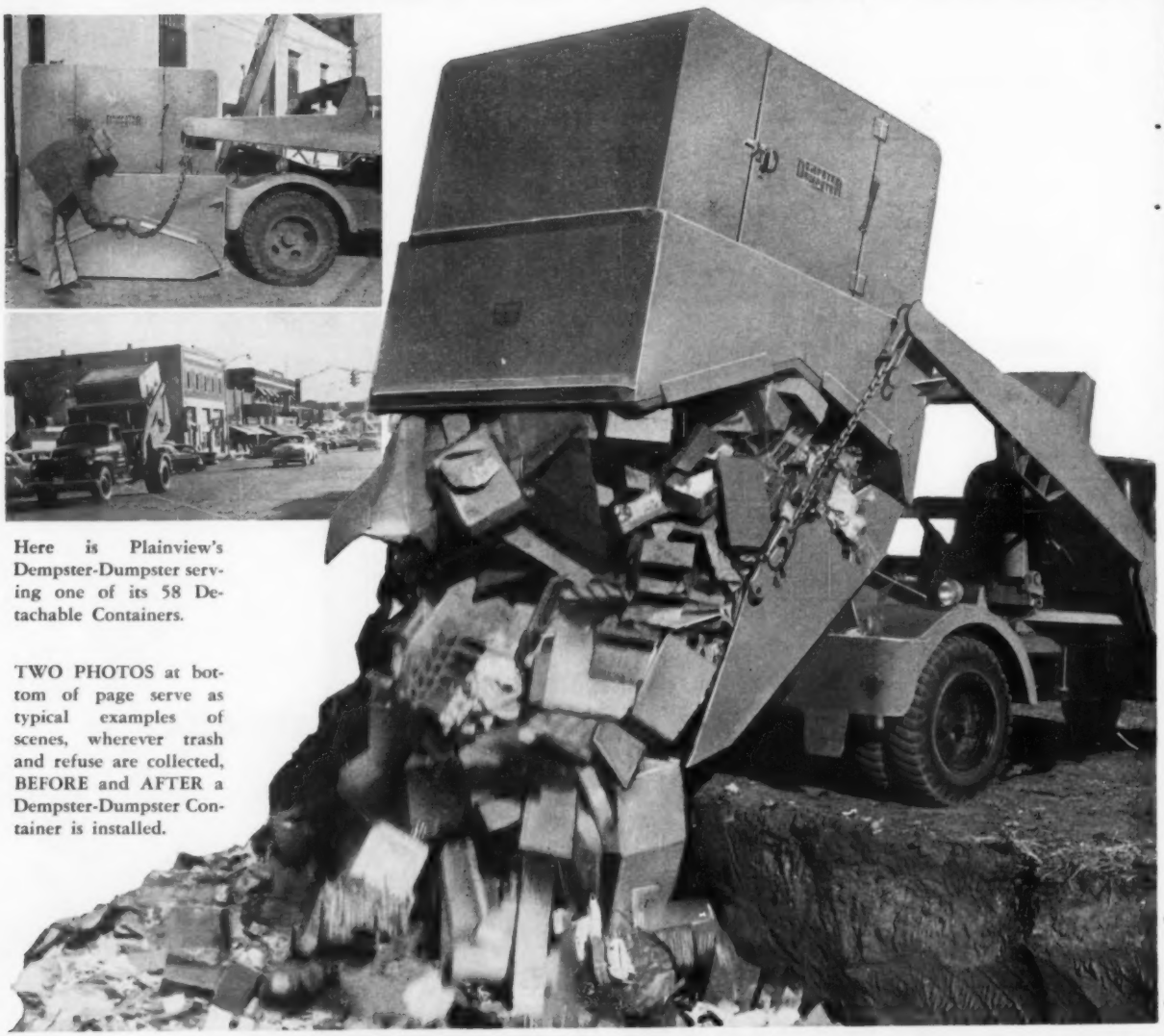
80-A FIFTH AVENUE — NEW YORK 11, N. Y.

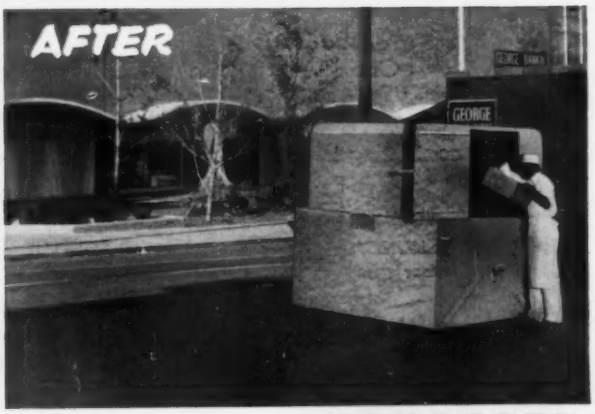
WRITE FOR BULLETIN NO. 111C

Look what's happening

Here is Plainview's Dempster-Dumpster serving one of its 58 Detachable Containers.

TWO PHOTOS at bottom of page serve as typical examples of scenes, wherever trash and refuse are collected, BEFORE and AFTER a Dempster-Dumpster Container is installed.





DEMPSTER

5115

to bulk refuse collection!

Cities, large and small, installing Dempster-Dumpster System featuring large capacity fire-proof, scavenger-proof steel Detachable Containers. Scores of them handled by only one man . . . cutting cost tremendously!

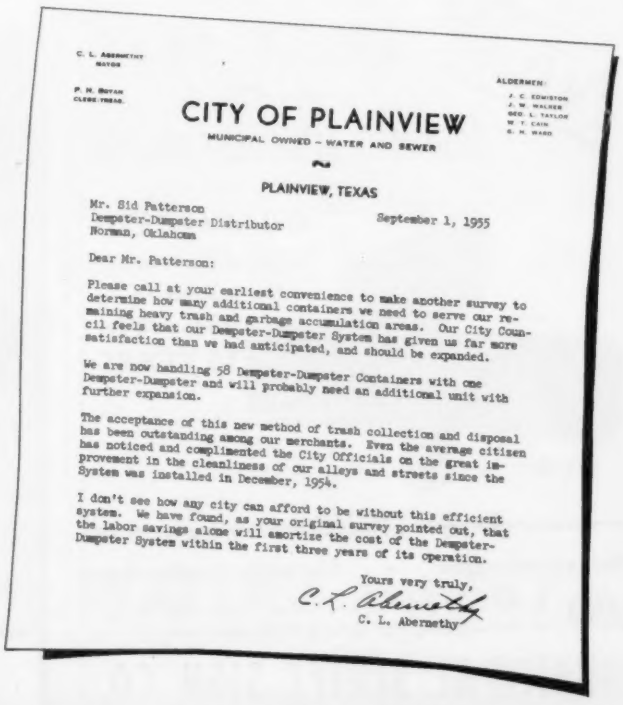
THERE IS A WAY to eliminate your bulk refuse handling problem . . . open cans, crates and boxes with overflowing refuse . . . rats feeding on it . . . wind scattering loose rubbish . . . dogs and cats munching in the mess . . . flies buzzing around the stuff—a costly potential in disease and fire hazards alone in damage to persons and property. And, the equipment and labor cost of collection is tremendous. There's a simple, economical and nationally recognized solution to this problem. Big steel Dempster-Dumpster Containers located at convenient bulk refuse accumulation points—each equivalent to 75 ordinary trash cans—in your business areas . . . in housing and apartment areas . . . at schools, hospitals, etc. Scores of them—25, 30, 40, 50—served on schedule by only one man, the driver of your truck-mounted Dempster-Dumpster.

You can understand why officials like Mayor Abernethy of Plainview say: "I don't see how any city can afford to be without this efficient system." Praiseworthy satisfaction is the result in other cities—Borger, Pampa, Odessa and Lubbock in Texas, for instance. Atlanta . . . Baltimore . . . Davenport, Iowa . . . Henderson, Ky. . . . Jackson, Tenn. . . . Lakeland, Fla. . . . Wilmington, N. C. . . . Richmond, Va. . . . Rochester . . . New York City . . . Denver . . . Montgomery, Ala. . . . Wyandotte, Michigan and many, many others.

Invariably, wherever this system is installed, one finds immediate praise of an outstanding improvement from merchant users and citizens alike. Without question, the Dempster-Dumpster System is recognized as the most sanitary and lowest cost method of bulk refuse collection ever devised. Ask us to send you complete information. Write today! Manufactured exclusively by Dempster Brothers, Inc.

"How can any city do without it--" says Plainview's Mayor Abernethy.

Wherever the Dempster-Dumpster System is in use, satisfaction beyond that anticipated is the same as expressed here by Mayor Abernethy. Your city, too, can save thousands of dollars and, at the same time, eliminate fire and health hazards and improve the cleanliness and appearance of your heavy producing districts with this amazing system. A survey of your bulk refuse collection may be arranged without obligation.



C. L. ABERNETHY
MAYOR

P. H. BRYAN
CLERK-TREAS.

ALDERMEN:
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CITY OF PLAINVIEW
MUNICIPAL OWNED - WATER AND SEWER

PLAINVIEW, TEXAS

Mr. Sid Patterson
Dempster-Dumpster Distributor
Norman, Oklahoma

September 1, 1955

Dear Mr. Patterson:

Please call at your earliest convenience to make another survey to determine how many additional containers we need to serve our remaining heavy trash and garbage accumulation areas. Our City Council feels that our Dempster-Dumpster System has given us far more satisfaction than we had anticipated, and should be expanded.

We are now handling 58 Dempster-Dumpster Containers with one Dempster-Dumpster and will probably need an additional unit with further expansion.

The acceptance of this new method of trash collection and disposal has been outstanding among our merchants. Even the average citizen has noticed and complimented the City Officials on the great improvement in the cleanliness of our alleys and streets since the System was installed in December, 1954.

I don't see how any city can afford to be without this efficient system. We have found, as your original survey pointed out, that the labor savings alone will amortize the cost of the Dempster-Dumpster System within the first three years of its operation.

Yours very truly,
C. L. Abernethy
C. L. Abernethy

BROTHERS, 826 Dempster Bldg., Knoxville 17, Tennessee

The BLAW-KNOX "Complete Package" of UNIVERSAL STREET FORMS
makes curb and gutter work a more profitable part of your business

One set of Blaw-Knox Steel Universal Street Forms handles *every* curb, gutter and sidewalk job faster *and at lower cost!* They're standardized for interchangeability . . . the only *completely standardized* steel form system available. Use them in interchangeable combinations to fit a wide variety of jobs . . . use them over and over. There's practically no maintenance. Your Blaw-Knox distributor can explain additional savings, show you how to make more profit with a "Complete Package" of forms. Call him today!

Ask your Blaw-Knox distributor about the "Complete Package" of concrete paving and ready-mix equipment.

BLAW-KNOX COMPANY
CONSTRUCTION EQUIPMENT DIVISION
Mattoon, Illinois
Offices in Principal Cities

MUNICIPAL ENGINEERS—Cut the high cost of labor and materials with strong, versatile, easy-to-use ***steel*** forms. Blaw-Knox can supply you with the greatest variety of standard or special forms available. Write today for Bulletin 2259 . . . 24 pages of illustrated form set-ups and detailed instructions on how to use them for every type of work.

NEW

Porcelain
STREET SIGNS
in 1-PIECE
EXTRUDED ALUMINUM FRAMES

#S-40

GUARANTEED
- No Maintenance
- No Refinishing

Required for 15 YEARS

SIGNS

Flat or embossed • **Any color combination**

SEND • *for FREE SAMPLE of section of aluminum Frame*
• *for Catalog and detailed Specifications*

MUNICIPAL STREET SIGN CO.
777 MEEKER AVE. BROOKLYN, N. Y.

For all-'round deodorizing . . .

ROUNDS

Fragrant, laborless deodorant discs for urinals, bowls, garbage pails, lockers, closets

Deodoroma ROUNDS cost in use averages only a *fraction* of one cent a day. Rounds are formed under 70,000 pounds pressure: are dense and durable. Fragrance is locked in: lasts until the last particle has vaporized—there's no harsh "moth cake odor." Packed eight to the telescoping box—each Round sealed airtight—easy-to-shape Holzit wire holder in every box. For literature write to The C. B. Dolge Company, Westport, Conn.

For free sanitary survey of your premises ask your Dolge service man

Dependable DOLGE
WESTPORT, CONNECTICUT

TWO NEW POWERFUL HUBER-WARCO MOTOR GRADERS

7D 140 H. P.
28,500 lbs.
6D 100 H. P.
25,000 lbs.

Torque Converter and Power-Shift Transmission

Designed to Give the Power and Weight You Want in a Motor Grader

- Powered by GM 3-71 and GM 4-71 diesel engines.
- Tail Shaft Governor—automatically adjusts RPM to meet load conditions.
- Foot Clutch has been eliminated.
- Perfect balance of power and weight.
- Power Sliding Moldboard is standard equipment.
- Hydraulically Cab-Controlled Blade Movement—90° either side.
- Four Wheel Brakes—standard on 7D.

For a demonstration — see your nearest Huber-Warco Distributor

HUBER W WARCO

HUBER-WARCO COMPANY
MARION, OHIO, U. S. A.
Road Machinery
CABLE ADDRESS: HUBARCO

ROAD ROLLERS • MOTOR GRADERS • MAINTAINERS • GRINDERS

"FOR MY MONEY, SHAWNEE'S O.K.!"

Earl Russell, Supt.
Water Department
Blue Springs, Missouri

As superintendent of a Water Department, Mr. Russell has many digging jobs to do. He says, "I am inexperienced in the operation of this equipment, but it is simple to operate and really does a rugged job. We have been digging and breaking concrete with this equipment. For my money, it's O.K." The Shawnee Scout owned by the Blue Springs, Missouri, Water Department is mounted on an International Harvester "300" Utility Tractor. It carries a Shawnee Special "heavy duty" Loader on the front.

The Shawnee Scout backhoe digs 12 ft. deep, loads almost 9 ft. high. Fits over 30 models of tractors.

SHAWNEE® SCRAPER DIGS DEEP!

- ⅝ Yd. Capacity
- Unlimited Digging Depth
- Hydraulically Controlled

Because the 66-inch wide cutting blade extends beyond the widest point of tractor and scraper, it can dig to unlimited depth. Designed for International Harvester "300" Utility and Ford Tractors.

FOR ADDITIONAL INFORMATION, WRITE SHAWNEE

NATIONWIDE SALES & SERVICE 533

SHAWNEE MANUFACTURING CO., INC.

1947 U. North Topeka Ave., Topeka, Kansas

YES! Please send me complete information on Shawnee earth-moving tools.

Name_____

Address_____

City_____ State_____

in fair weather

or foul

(MB) sweepers keep . . . tractors busy year 'round

Your tractors do double duty with M-B Sweepers keeping streets and sidewalks safe and clean during all seasons.

In Winter your tractors are put to work sweeping snow from streets, parking areas and skating ponds. Milder weather brings multiple uses on all public thoroughfares.

Look At These Superior M-B Features!

Longer wearing fiber brushes — 5′ & 6′ widths — 30° sweeping angle; hydraulic controls raise brush 8" to clear curbs and obstructions; dust hood (easily removable for snow sweeping) keeps dust down to provide better operator vision; floating action broom compensates for uneven brush wear and follows surface contour; brush quickly removable for drawbar work; broom may be disengaged while traveling; sprinkler attachment available; M-B sweepers completely engineered and ready to mount on most popular tractors.

More Streets and Roads Are Kept Clear With M-B Sweepers Than Any Other Kind!

MB CORPORATION
NEW HOLSTEIN, WIS.

PACKER BODIES • LINE MARKERS • SWEEPERS • PAINTS AND BEADS

MANUFACTURERS OF QUALITY MUNICIPAL AND CONSTRUCTION EQUIPMENT SINCE 1907

"AFTER-RAIN" Sewer Stoppages
...no longer a worry at Johnstown, Pa.

Just trying to **open** one 12" Storm Sewer, after a rain, used to be a **2 or 3 day job** in Johnstown, Pa. After the last rain, they put their new SeweRodeR to the test. It not only **opened—but cleaned** this line in a single day. What's more the pleased sewer crew (from right to left—Foreman Herman Weiman, and Operators Frank Zdnovec and Colon Griffin) did the job without touching a rod or working in the manhole. The SeweRodeR performs all operations mechanically, eliminating 9/10's of the hard labor.

Arrange to see the SeweRodeR in operation—not on a routine job, but on a tough assignment—and you will agree with Johnstown, Pa. that investment in a SeweRodeR is one way to get the most for the Taxpayers' Dollar.

FLEXIBLE
INC. 3786 Durango Ave.
Los Angeles 34, Calif.

(Distributors in Principal Cities)

Hoist

A valuable time saver around tire repair shops and garages.
Utility companies find many uses for Pacific Hoists.
Oil drums with barrel grab are easily loaded and unloaded
Bottle grab is used in loading and unloading of carbonic tanks

Pacific Portable Hoists cut receiving and delivery costs...pays for itself in a few months... consumes a minimum of current from regular truck battery. Low in price. Interchangeable from truck to dolly in moments.

Write factory for illustrated literature and name of local dealer.

BURTCHAELL HEATING CO.
HOIST DIVISION: 2944 S. E. Powell • Portland 2, Oregon

Handiest for light and power . . . a Fairbanks-Morse portable generator!

There are hundreds of emergency jobs where you can't run power lines, but where you can take a Fairbanks-Morse portable generator! For example — in manholes, on roofs, at pumping stations stopped by high-line failure; places where trucks need roadside service; when power failure jams crossing gates or disrupts traffic signals!

Handiest Fairbanks-Morse model for such emergencies is the 25P36. Available in 600-, 100- and 2500-watt capacities. Produces 115-volt AC current; single phase, 60 cycle. Manually started. The 2500-watt model weighs only 140 lb. Write Fairbanks, Morse & Co., Chicago 5, Ill.

FAIRBANKS-MORSE
a name worth remembering when you want the best

GENERATING SETS • WATER SYSTEMS • MOWERS • MAGNETOS
PUMPS • MOTORS • SCALES • DIESEL LOCOMOTIVES AND ENGINES

with HEIL Colectomatic

Finger-tip Control. Here's timesaving simplicity — the touch of a lever starts the completely automatic loading and packing cycle. A single hydraulic cylinder closes the safety door and raises the hopper. Then the single-cylinder packer sweeps load out of hopper and begins packing action. In just 23 trouble-free seconds, the safety door opens for the next load.

Horizontal-Thrust Packing Action. The packing plate is located high in the hopper to provide better leverage . . . exerts a stronger packing action against the load through horizontal thrust. This packs a maximum amount of refuse into the body, reduces the number of unloading trips, assures better collection service.

Simplified Operation. By reducing the number of operating parts, the Heil Colectomatic eliminates trouble. There are no chains for refuse to jam in . . . only two hydraulic cylinders control entire work cycle, a third controls body dump. Should refuse jam between packing plate and floor of hopper, a push of a stoppage control lever drops hinged hopper and loading cycle begins again in seconds. It all adds up to lower maintenance, more money saved for the taxpayer. BH-61

OTHER COLECTOMATIC FEATURES TO SIMPLIFY REFUSE COLLECTION

- **Quiet Operation**
  No clanking chains, minimum truck engine acceleration when loading.
- **Comfortable Loading**
  Low, wide sill allows two men to load hopper side by side.
- **Simplified Servicing**
  All lube points can be reached through panel door on each side of body.
- **Fast Dumping**
  Flat floor, obstruction-free tapered body provide fast, clean dumping. Load distribution on axles provides good stability while dumping.
- **Safety**
  Load-packing mechanism is completely enclosed. Safety door protects personnel from flying debris.
- **Compact Body**
  Allows better maneuvering when loading in narrow, restricted areas.

Get a demonstration from your Heil distributor and see the fast, trouble-free operation of a Colectomatic.

THE HEIL CO.

DEPT. 4326, 3043 W. MONTANA ST., MILWAUKEE 1, WISCONSIN

Factories: Milwaukee, Wis., Hillside, N. J., Lancaster, Pa.

Heil Sales Offices: New York; Union, N. J.; Lancaster, Pa.; Atlanta, Cleveland, Milwaukee, Chicago, Kansas City, Denver, Dallas, Los Angeles, Seattle

NEW HEIL MOVIE, "Made to Order," describes new Colectomatic in full sound and color. Address requests for free use to The Heil Co., Body and Hoist Division, Milwaukee 1, Wis.

4-wheel-drive
PAYLOADER® *does*
two important jobs
on sewer project . . .

Cushion and Cover

The "PAYLOADER" tractor-shovel on this sewer job is one of three all-new, four-wheel-drive sizes by Hough, the pioneer and leader in four-wheel-drive shovel manufacture. Each size is way ahead of its class in digging power, carrying capacity, stability, safety and operator comfort. Each features the amazing new Hough bucket action that has tremendous pry-out force and 40 degree break-out at ground level.

There's also torque converter drive, more horsepower per bucket capacity and many other proven Hough advantages that lower the cost of digging, scooping-up, loading, moving and piling earth and bulk materials. Your Hough Distributor is anxious to show off these greater new "PAYLOADER" units and what they can do for you.

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

Construction of this sewer, using 24" clay pipe, calls for the placing of a base of gravel under the pipe. The 4-wheel-drive model HH "PAYLOADER" picks up the gravel from piles on the opposite side of the busy highway and scatters it in the trench behind the ditching machine. It then goes to the rear and backfills until it is again needed to gravel another section.

THE FRANK G. HOUGH CO.
710 Sunnyside Ave., Libertyville, Ill.

Send full information on new 4-wheel-drive PAYLOADER units.

- ☐ Model HO (2 yd.)
- ☐ Model HH (1½ yd.)
- ☐ Model HU (1 yd.)

Name .....
Title .....
Company .....
Street .....
City .....
State .....

Signs of a Wise Investment

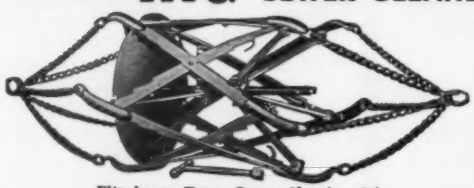
EMBOSSED SIGNS BY MIRO-FLEX

When you invest in Miro-Flex signs, you're sure of getting your money's worth...and you're sure that it will be an investment that will last a lifetime. That's because Miro-Flex signs are embossed...actually made for tomorrow's traffic as well as today's. Embossed signs are stronger and they are more legible. To top it off, Miro-Flex signs are finished with the best baked-on enamel on zinc-coated Bonderized steel. Be sure you have your free copy of the Miro-Flex sign catalog as a ready reference.

WRITE TO THE MIRO-FLEX CO., INC.

1824 EAST SECOND ST. WICHITA, KANSAS

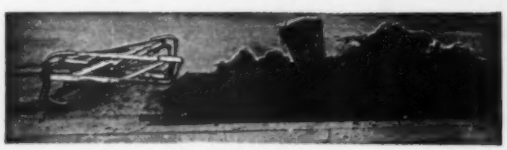
EXPANDING ROOT CUTTER SEWER CLEANER



Fits in on Every Sewer Cleaning Job
Adjusted in 30 seconds to fit any sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

Open and in action removing roots and caked sediment like this.



Write for our new catalog on complete sewer cleaning equipment.

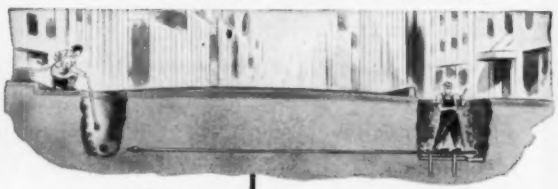
EXPANDING SEWER MACHINE COMPANY

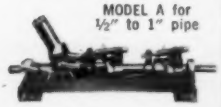
108 East Walnut St. Nappanee, Ind.

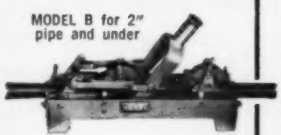
Trojan Pipe Puller & Pusher

installs or renews pipe under pavement

in half the time required by any other machine!







Exclusive continuous action, which eliminates all resetting of grip, does the trick!

The Trojan combines pushing and pulling operations in one machine—keeps pipe continuously moving—lets you install 40' services in as little as 20 min.

Model A needs only 5' trench. One man can easily install the average service. 15 tons of pushing pressure possible.

Model B is reversible in 30 seconds—has 3 speeds for different soils. New dog with individual inserts cuts maintenance.

Write today for full details!

The TROJAN Manufacturing Co.

1113 Race Drive • Troy, Ohio

National's De luxe adding machine

*Live keyboard** with keytouch adjustable to each operator!

Saves up to 50% hand motion — and effort! Never before have so many time-and-effort-saving features been placed on an adding machine.

Every key operates the motor—so you can now *forget the motor bar.* No more back-and-forth hand motion from keys to motor bar.

Keys are instantly adjustable to *each* operator's touch! No wonder operators are so enthusiastic about it. They do their work faster with up to 50% *less effort.* New operating advantages, quietness, beauty!

"Live" Keyboard with Adjustable Keytouch *plus* 8 other time-saving features combined only on the National Adding Machine: Automatic Clear Signal . . . Subtractions in red . . . Automatic Credit Balance in red . . . Automatic space-up of tape when total prints . . . Large Answer Dials . . . Easy-touch Key Action . . . Full-Visible Keyboard with Automatic Ciphers . . . Rugged-Duty Construction.

A National "De luxe" Adding Machine pays for itself with the time-and-effort it saves, continues savings as yearly profit. One hour a day saved with this new National will, in the average office, repay 100% a year on the investment. See a demonstration, today, on your own work. Call the nearest National branch office or dealer.

*TRADE MARK REG. U. S. PAT. OFF.

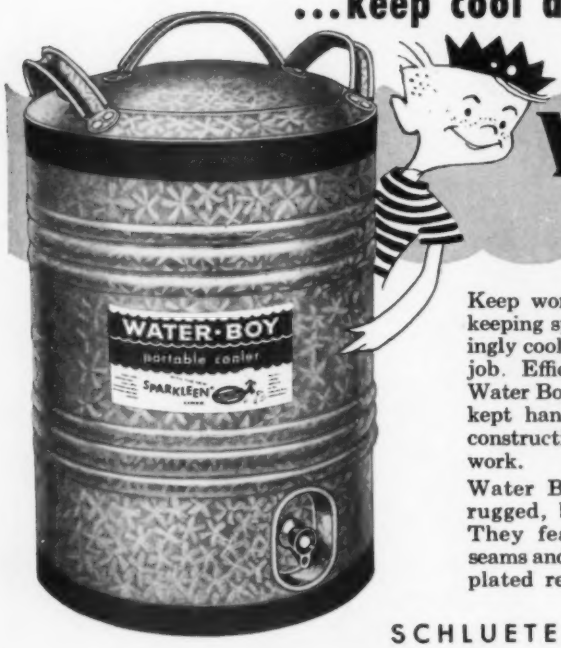
National

ADDING MACHINES • CASH REGISTERS
ACCOUNTING MACHINES

THE NATIONAL CASH REGISTER COMPANY, DAYTON 9, OHIO
977 OFFICES IN 94 COUNTRIES

Keep Worker Efficiency Up!

...keep cool drinking water on the job with



WATER BOY
portable water coolers

Keep workmen on the job by keeping sparkling pure, refreshingly cool drinking water on the job. Efficiency goes up when Water Boy Portable Coolers are kept handy on every type of construction and maintenance work.

Water Boy Coolers are big, rugged, built to take abuse. They feature double-locked seams and bottoms, brass-nickel plated recessed faucets, fully enclosed or open-rimmed covers. There's the new SPARKLEEN liner, too, that keeps water sparkling clean, odor-free and taste-free.

You'll find Water Boys are a money-saving investment everywhere they're used.

QUALITY HEAVY METALWARE
Deluxe
SCHLUETER MFG. CO. ST. LOUIS, MO.

SCHLUETER MFG. CO., ST. LOUIS 7, MISSOURI

PROGRESSIVE CITIES SELECT
F&E INCINERATOR STOKERS

Designed and manufactured by a century-old concern with 40 years' experience in designing, engineering and completely manufacturing hydraulically-powered stokers.

"F&E" Hydraulically-Powered Stokers are the most talked-of incinerator advancement in the field today.

Should you wish to see an "F&E" Incinerator Stoker in operation and get firsthand information on their revolutionary performance, we will be pleased to advise where the installation nearest you is located.

F&E

FLYNN & EMRICH CO.

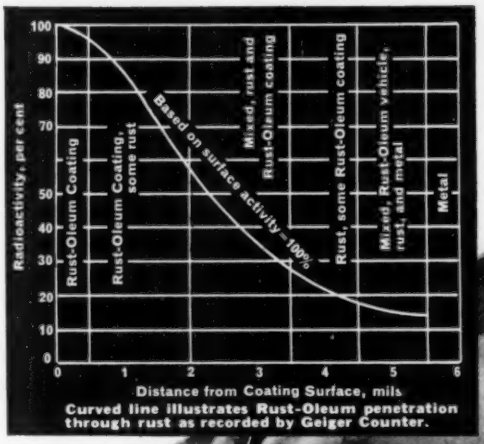
301 NORTH HOLLIDAY STREET • BALTIMORE 2, MARYLAND

RUST-OLEUM®

PENETRATION

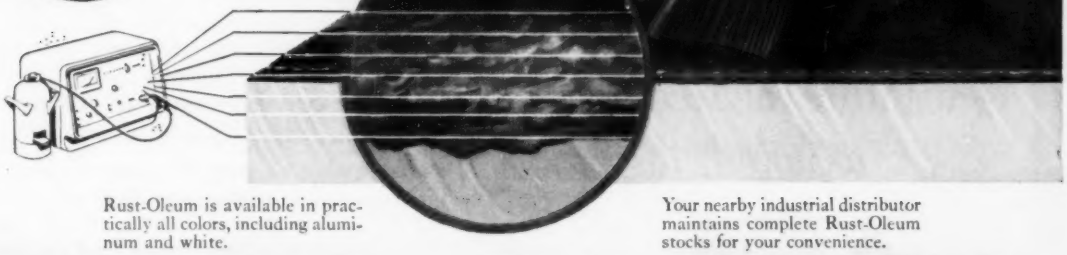
through rust to bare metal traced by Geiger Counter. To effectively stop rust—the vehicle of a protective coating, when applied over a sound, rusted surface—must penetrate through the rust down to bare metal. **Rust-Oleum does exactly that!—as proved by radioactive research!** Rust-Oleum's specially-processed fish oil vehicle was radio-activated and formulated into Rust-Oleum 769 Damp-Proof Red Primer—then applied to rusted test panels. Penetration *through rust* to bare metal by Rust-Oleum's specially-processed fish oil vehicle was then traced by Geiger Counter.

You stop rust, because Rust-Oleum's fish oil vehicle soaks deep down to bare metal and into the tiny pits where it drives out air and moisture that cause rust. You save, because this same *penetration* enables you to apply Rust-Oleum directly over rusted surfaces—usually eliminating costly surface preparations. Attach coupon to your letterhead for your thirty-page report entitled, "The Development of a Method To Determine The Degree of Penetration of a Rust-Oleum Fish-Oil-Based Coating Into Rust On Steel Specimens," prepared by Battelle Memorial Institute technologists.



Curved line illustrates Rust-Oleum penetration through rust as recorded by Geiger Counter.

There is only one Rust-Oleum. It is distinctive as your own fingerprint. Accept no substitute. Buy—and specify only Rust-Oleum. You'll be happy that you did.



Rust-Oleum is available in practically all colors, including aluminum and white.

Your nearby industrial distributor maintains complete Rust-Oleum stocks for your convenience.

RUST-OLEUM®

STOPS RUST!

See our Catalog in Sweets, or write for complete information.

ATTACH TO YOUR LETTERHEAD—MAIL TODAY

Rust-Oleum Corporation
2511 Oakton Street
Evanston, Illinois

- ☐ Complete literature including color charts.
- ☐ Thirty-page report on Rust-Oleum penetration.
- ☐ Nearest source of supply.

This Winter . . . BE READY TO GO! LICK ICE and SNOW . . .

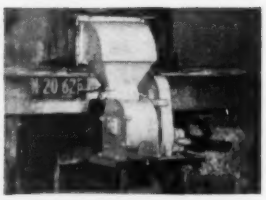
WITH *Baughman*
ICE CONTROL EQUIPMENT

MODEL K4SC Salt and Cinder Spreader
Two-speed transmission for controlled application, thick or thin . . . oil-sealed clutch for spot-spreading . . . patented safety baffles for left or right hand spread (8 to 40 ft.). Two models: Power Take-Off (shown here), and Auxiliary Engine Drive. Write for BULLETIN A-398.

PULL-TYPE SPREADER

Powered by own traction; spreads in complete circle with improved distributor plate only 13" above ground. Includes tow hitch. BULLETIN A-371.

BAUGHMAN SALT MISERS



Two models: *Hydraulic Model 55-H* (shown), cab-controlled; attaches to any hydraulic-lift dump truck; adjustable volume control; directional vanes control spread pattern. *Auxiliary Engine Model 55*, clamps to tailgate of any dump truck. BULLETIN A-401.

WRITE FOR ILLUSTRATED LITERATURE

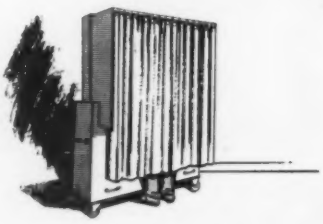
BAUGHMAN

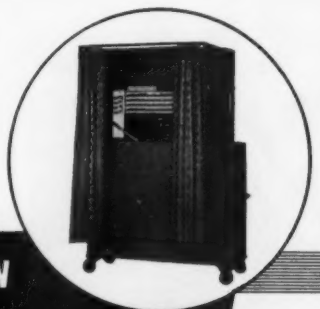
BAUGHMAN MANUFACTURING COMPANY, INC.
150 SHIPMAN ROAD, JERSEYVILLE, ILLINOIS

In More Than 7,000 Communities Using the Automatic Voting Machine - - -

Absolute secrecy is assured the Voter...

Each voter casts and *records* his own vote in absolute secrecy provided only with voting machines. Only the voter will ever know how or for whom he voted.

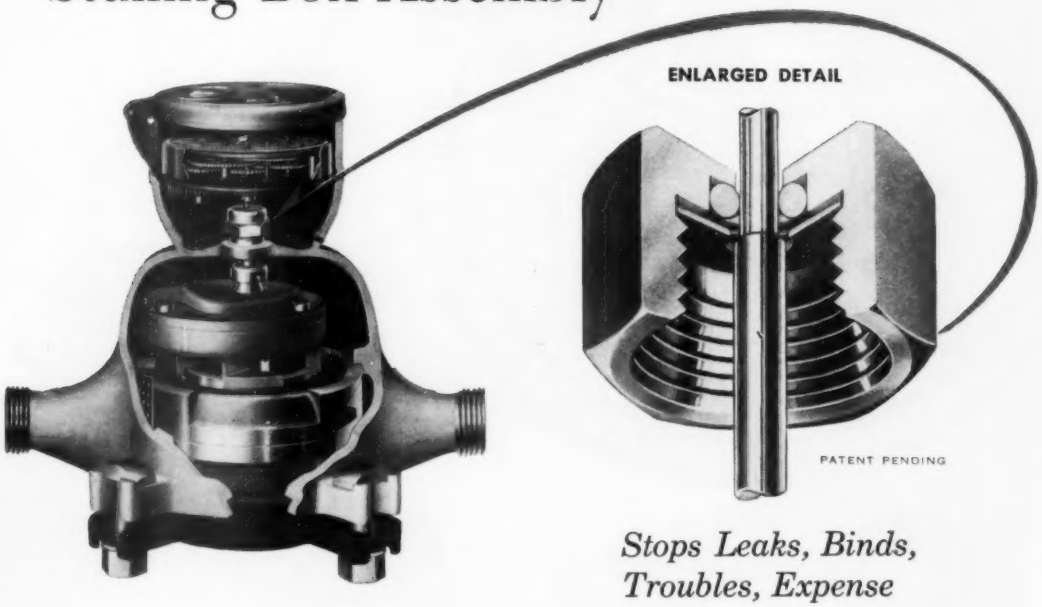




Investigate all the advantages of machine voting by writing—

AUTOMATIC VOTING MACHINE CORPORATION
JAMESTOWN, NEW YORK

The Rockwell "O" -Ring Stuffing Box Assembly



Stops Leaks, Binds, Troubles, Expense

The Greatest Single Advance In Water Meter Construction In Years

Here's another outstanding development from Rockwell Research. It's a sure cure for all the headaches that go with meter stuffing box maintenance. Perfected four years ago, this Rockwell "O"-Ring Stuffing Box assembly has now been thoroughly field tested. *It won't leak; can't bind!* Meters with this construction run more freely, stay accurate longer. Worn spindles are a thing of the past.

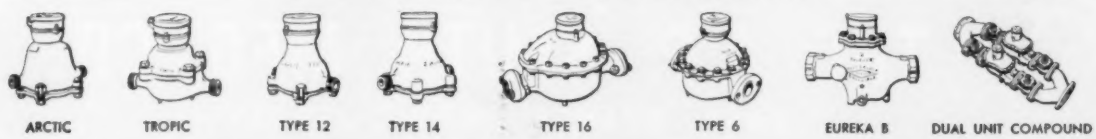
Now *all* Rockwell water meters make use of this *exclusive* "O"-Ring design upon which patent application has been made. There's no extra cost for this construction, but a lot of extra satisfaction and value. Ask your Rockwell representative to demonstrate. And be sure to inquire about the use of "O"-Ring stuffing box nuts as interchangeable replacements for stuffing box assemblies in earlier model Rockwell meters.

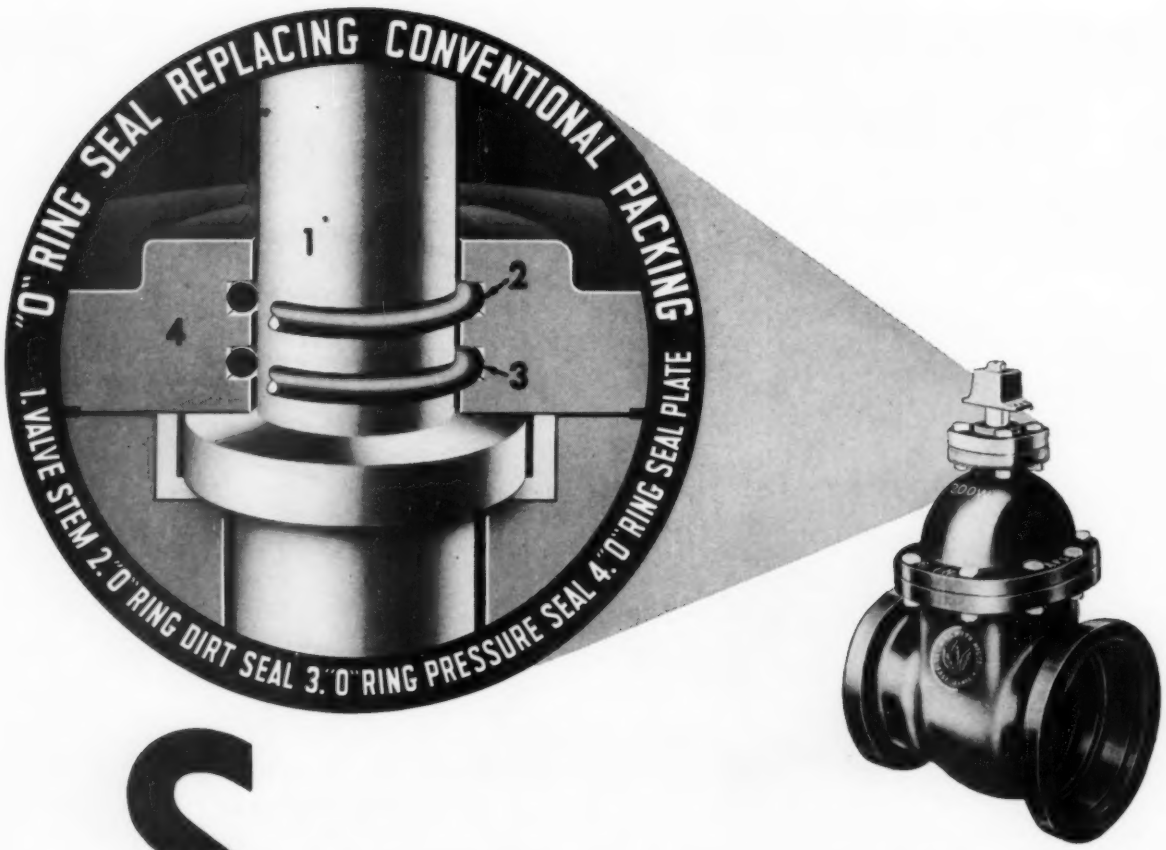
ROCKWELL MANUFACTURING COMPANY

PITTSBURGH 8, PA. Atlanta Boston Charlotte Chicago Dallas Denver Houston Los Angeles Midland, Tex. New Orleans New York N. Kansas City Philadelphia Pittsburgh San Francisco Seattle Shreveport Tulsa In Canada: Rockwell Manufacturing Company of Canada, Ltd., Toronto, Ontario

ROCKWELL WATER METERS

A Size and Type For Every Kind of Service





SMITH VALVES
WITH O'RING SEAL

When specified, "O" Rings replace conventional packing and reduce maintenance to a minimum. The lower "O" Ring (#3) is the pressure seal. The upper "O" Ring (#2) the dirt seal. The initial compression of the "O" Ring provides the seal when the valve is closed. When subject to water pressure the lower "O" Ring is forced to the top of the groove. The sealing force increases as the pressure increases. The "O" Ring seal construction eliminates packing, the packing gland, gland adjustment and gland bolts and nuts. All Smith Valves can be equipped with "O" Ring Seal plates. Write for details.

45

FIRE HYDRANTS · VALVES · SINCE 1896

THE A.P. SMITH MFG. CO.

EAST ORANGE, NEW JERSEY

This timer unit assures performance, accuracy, dependability and rugged durability in these two famous products

This aircraft Flight Recorder, manufactured by the Mechanical Division of General Mills, etches a continuous 300-hour record of heading, air speed, vertical acceleration and altitude on aluminum foil. The recording device, enclosed in a specially fabricated sphere, is designed to withstand shocks up to 100 G's and to resist temperatures of 2000 degrees F, up to 30 minutes in duration.

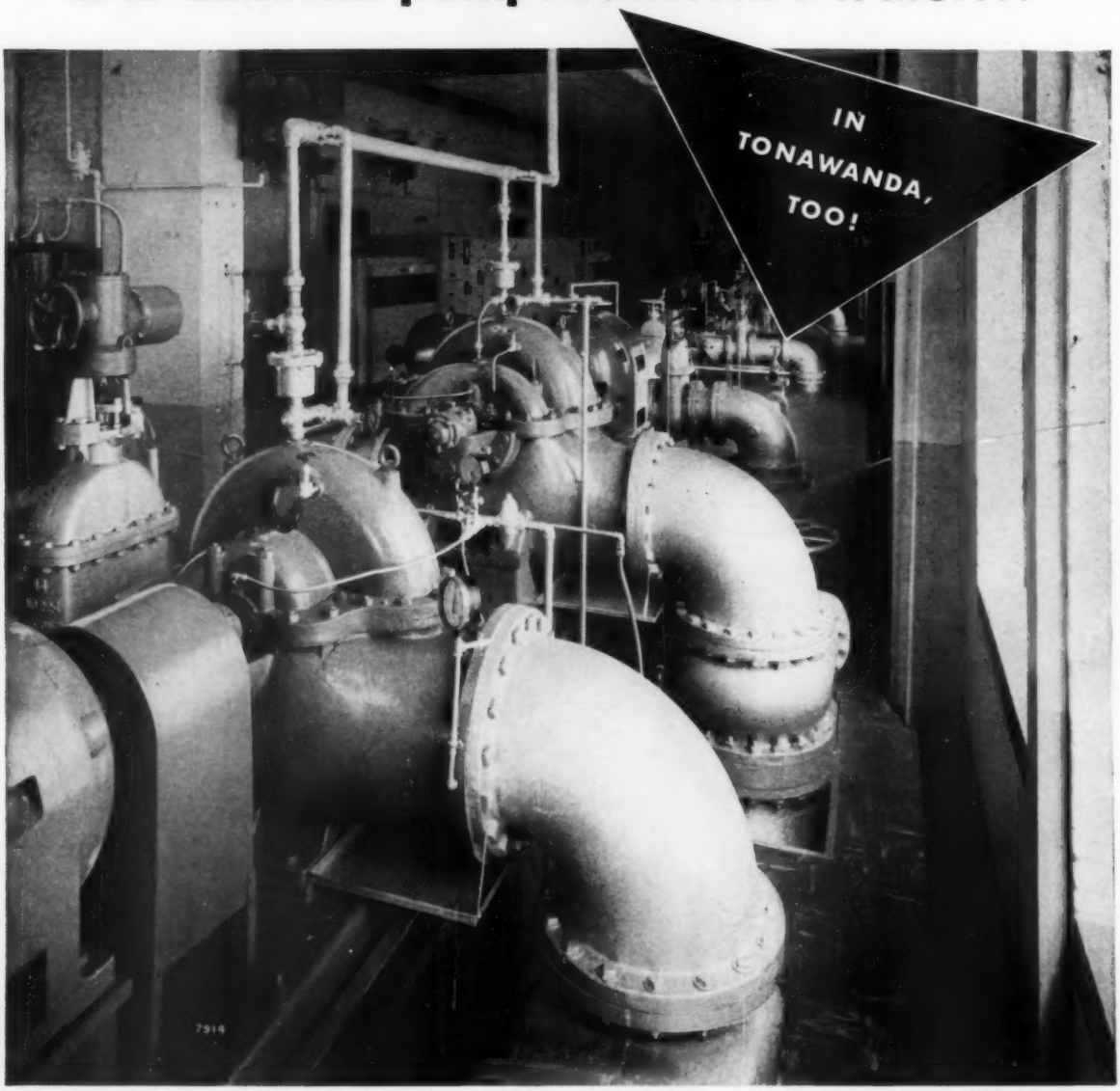
The sturdy Park-O-Meter, produced by the originators of metered parking, uses this same dependable timer unit in construction of the leading meter for on- and off-street parking control. This snap-on unit, in its dust and moisture tight case, keeps your meters working full time and reduces maintenance service to an unbelievably low minimum. Park-O-Meter costs more to build but saves your city money.

SEE PARK-O-METER BEFORE YOU BUY ANY METER

MAGEE-HALE PARK-O-METER COMPANY

COMMERCE EXCHANGE BUILDING • OKLAHOMA CITY 2, OKLAHOMA

DE LAVAL pumps America's water...



Six De Laval pumps are on the job in the recently modernized Tonawanda, New York water works. These efficient pumps have a total capacity of 40 mgd, thus help meet the increased needs of this growing community.

Today 80% of all cities in the United States, with a population of 100,000 or over, use De Laval centrifugal pumps. Capacities of De Laval centrifugal water works pumps range from 100 thousand to 100 million gallons per day. *Write for your copy of new De Laval Bulletin 1004 giving data on these pumps.*

Consulting Engineers:
Metcalf & Eddy,
Boston, Massachusetts

Operating Superintendent:
Oscar B. Schulte

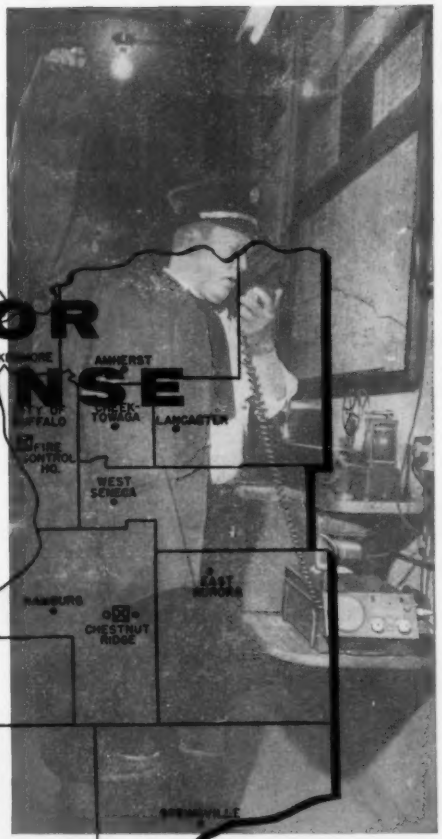
DE LAVAL *Centrifugal Pumps*

DE LAVAL STEAM TURBINE COMPANY
866 Nottingham Way, Trenton 2, New Jersey

BL922

ERIE COUNTY RADIO SYSTEM . . .

READY FOR CIVIL DEFENSE



ENTIRE BUFFALO N. Y. AREA NOW PROTECTED WITH INTEGRATED COMMUNICATIONS

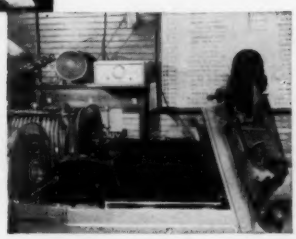
THE PROBLEM: Coordinating the activities of 96 volunteer fire companies with those of the City of Buffalo fire department for fire-fighting, Civil Defense and other emergencies.

THE ANSWER: Only a custom engineered two-way radio system could handle it. The Federal Civil Defense Administration approved the Erie County CD Communications project. After lengthy engineering study and exhaustive performance tests, Motorola equipment was chosen for the entire communications network.

In and working now, the county volunteer radio system normally functions separately from the city system. The county system has 10 base stations—each controlling the volunteer fire trucks in a certain area. In emergencies, the main Motorola radio control center takes over, and—with fingertip control—can integrate both systems . . . combining the efforts of *every* fire-fighting unit in Erie County, *in minutes*.

With fire protection greatly increased and a Civil Defense network on call 24 hours a day, the Buffalo area sleeps easier these nights. Talk over *your* needs with a Motorola Communications Engineer. He's ready to discuss complete details of CD radio systems and FCDA certified equipments. Write, phone or wire Motorola today.

Base station (one of 10) calls volunteer co's.—controls and coordinates their activities.



Receiver in station house operates siren when call comes in. Radio on truck keeps constant contact—to, from and at fire.

MOTOROLA

2-WAY RADIO

MOTOROLA COMMUNICATIONS & ELECTRONICS, INC.
A SUBSIDIARY OF MOTOROLA, INC.
4501 AUGUSTA BOULEVARD • CHICAGO 51, ILLINOIS
ROGERS MAJESTIC ELECTRONICS LTD. TORONTO, CANADA

Motorola consistently supplies more mobile and portable radio than all others combined.
Proof of acceptance, experience and quality.
The only COMPLETE radio communications service—specialized engineering...product...customer service...parts...installation...maintenance...finance...lease.
"The best costs less—specify Motorola."

'round the clock, versatile Harley-Davidson Solos help

make more effective use of your manpower!

Here's what you get when you mount men on Harley-Davidson Solo Police Motorcycles. Each man can cover his district more thoroughly than in any other manner. What's more, he's out in the open — easily visible — performs the important task of deterring potential law violators without arousing public antagonism.

Then, too, each man can handle a wide variety of jobs . . . has the mobility and maneuverability to "wheel through" congested areas, get to any potential trouble spots in a hurry.

Yes, with Harley-Davidsons, you make your manpower budget dollars go further. And, at the same time, you are giving your community the most versatile and economical law enforcement vehicle available today.

For complete details, contact the Harley-Davidson dealer in your city. Or, write direct for informative literature. HARLEY-DAVIDSON MOTOR COMPANY, MILWAUKEE 1, WISCONSIN.

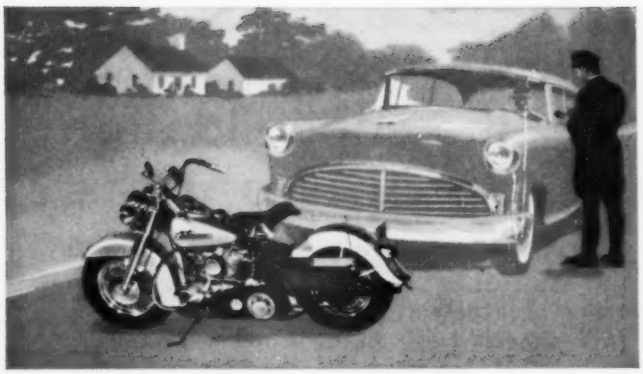
HARLEY-DAVIDSON police motorcycles

10:30 A.M. — ESCORT DUTY. Officer leads way for visiting dignitaries. Also escorts funerals. Keeps processions intact.

2:00 P.M. — SPEED TIMING. One officer clocks speeds with timing device. Has Solo ready if pursuit is needed.

8:00 P.M. — CROWD CONTROL. During parades and sporting events, Solo-mounted officer keeps crowds in check.

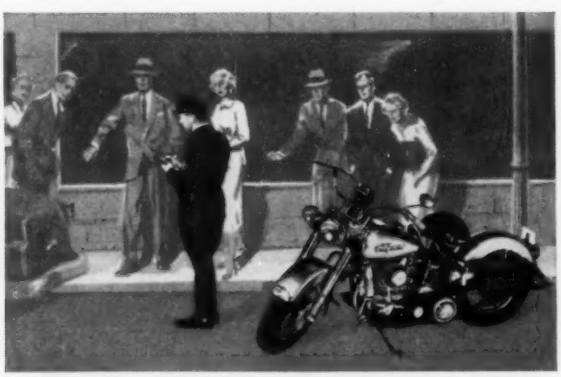
11:00 P.M. — EMERGENCY TRAFFIC REROUTING. In seconds, officer is at scene to direct traffic around danger area.



7:45 A.M. — APPREHENDING TRAFFIC OFFENDER. Patrolling officer has acceleration to overtake and catch reckless driver.

8:15 A.M. — UNSNARLING TRAFFIC. Officer wheels through narrow openings to get to focal point of traffic jams.

5:03 P.M. — FREEWAY TRAFFIC PACING. Traffic moves smoothly, efficiently. Easily visible officers deter potential speeders.



6:00 P.M. — MINOR ACCIDENT. Officer easily maneuvers his Solo through congested traffic to reach and report on minor accident.

1:45 A.M. — FIRST AID. Quickly, efficiently, officer reaches accident scene, applies first aid, radios for ambulance.

Harley-Davidson Servi-Cars are great for downtown traffic and residential control. In addition to radio, they have ample room to carry fire extinguisher, first aid kit and other special equipment.

HARLEY-DAVIDSON police motorcycles

SINCE
1861

LUDLOW

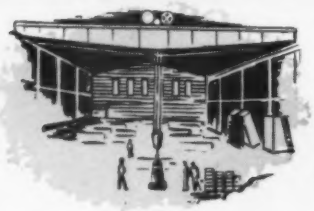
How the consolidation of **two great valve companies** can help you

In January, 1955, two great valve companies consolidated their resources. They had been neighbors in Troy, New York and friendly competitors for two thirds of a Century. The names remain the same but Rensselaer became a Division of The Ludlow Valve Manufacturing Company — All now under one management in one plant, with unit responsibility to its customers.

THE BEST IN DESIGN

You, the Water Works Executives are the final judges. You have cast your ballots in the form of extensive purchases over the last half century. In many cases the result is obvious, but your opinions on A.W.W.A. valves and hydrants vary. Therefor both lines will be continued and any Representative of the combined companies can show you the characteristics of each. In the meantime our search for ever-better valves goes on.

THE BEST IN PRODUCTION



The production facilities of the combined Companies have been consolidated and at the same time are being greatly expanded. Only the newest, most modern equipment has been retained. Hundreds of thousands of dollars worth of new equipment is expanding the capacity and giving even greater assurance of our ability to serve. This means insurance for you, more local stocks to draw on, and shorter deliveries on heavy equipment. This all means lower inventories for you.

THE LUDLOW VALVE MFG. CO., INC. TROY, N.Y.

TRADE LUDLOW MARK

GATE VALVES • FIRE HYDRANTS • SQUARE BOTTOM VALVES
CHECK VALVES • TAPPING SLEEVES • AIR RELEASE VALVES

SINCE

1885 — Rensselaer

THE BEST IN EXPERIENCE

The combined Companies have had experienced engineers in the field in every State of the Union for a total of 165 years of service. These men have helped you, you have helped them, and in turn they have helped many others. The results of this close contact over a long period have been reported back and catalogued to become an up-to-date "Encyclopedia" for the Water Works field.

THE BEST IN SALES ENGINEERING

Sales Engineering in the field backed by the extensive fund of knowledge in the home office is the art of locating the right product in the right place at the right time, with the lowest possible cost and installation time. In most cases an error in the original selection can cost far more in digging, flooding or stoppages, than the original equipment. In other cases, the sales engineer may make important savings in the installation cost. The Ludlow and Rensselaer Sales Engineers and the "Encyclopedia" are at your service.

AND THE TRADITIONS GO ON

The names, Ludlow and Rensselaer mean the same today that they have during your lifetime. The desire to serve the Water Works Field in person —in research and design and in prompt delivery of original equipment and spare parts for all products has not changed. On the other hand, our ability to serve has at least doubled.

We shall appreciate the opportunity to explain in person what all of this means to you.

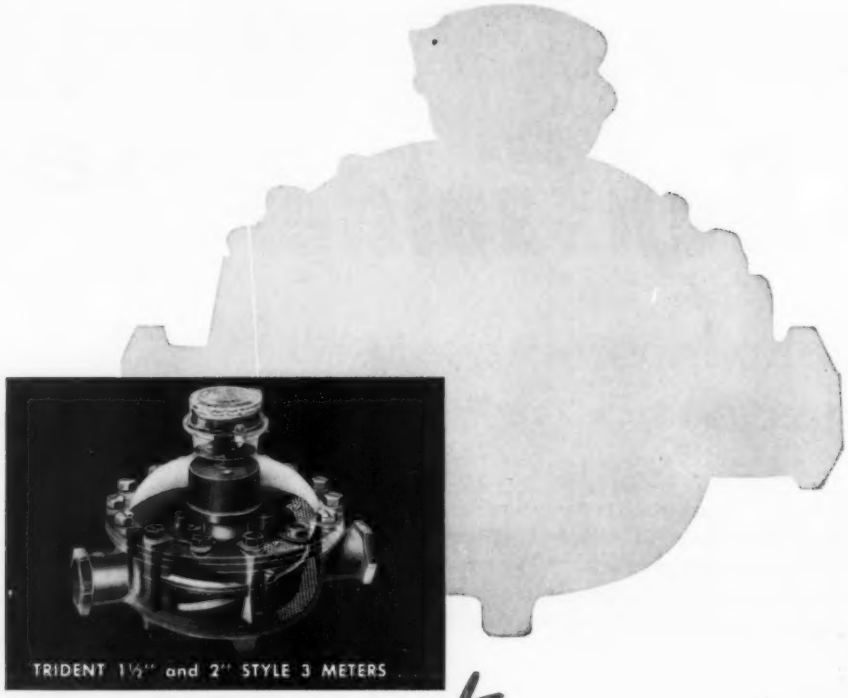
Bulletins available on all equipment, replacement parts and accessories.

Rensselaer VALVE CO.

TROY, NEW YORK

DIVISION OF THE LUDLOW VALVE MANUFACTURING CO., INC.

GATE VALVES • FIRE HYDRANTS • SQUARE BOTTOM VALVES
CHECK VALVES • TAPPING SLEEVES • AIR RELEASE VALVES



LARGE METER *Capacity*
+ SMALL METER *Sensitivity*
= MAXIMUM *Revenue*

No proud father would argue that twins are as easy to take care of as one. That's one reason Neptune Trident Style 3 meters are recommended in place of compound meters for 1½" and 2" service lines. The Style 3 disc meter is accurate down to exceptionally low flows, and handles high flows with ease.

The simpler Style 3 meter maintains accuracy longer, and repairs (when necessary) are easier. Modern Style 3 parts fit older meters. There's no obsolescence . . . you modernize as you go. And its lower initial cost gives you a nice saving. So why use two meters when one will do the job?

Style 3 meters were the first to feature a special pressure adjustment. In high-pressure lines, the outlet of the meter is throttled to prevent overspeeding, and in low pressure installations, the outlet is opened wide to minimize loss of head.

Proof of the accuracy and efficiency of the Trident Style 3 will be found in your own testing equipment . . . in lower maintenance costs . . . and in increased revenue.

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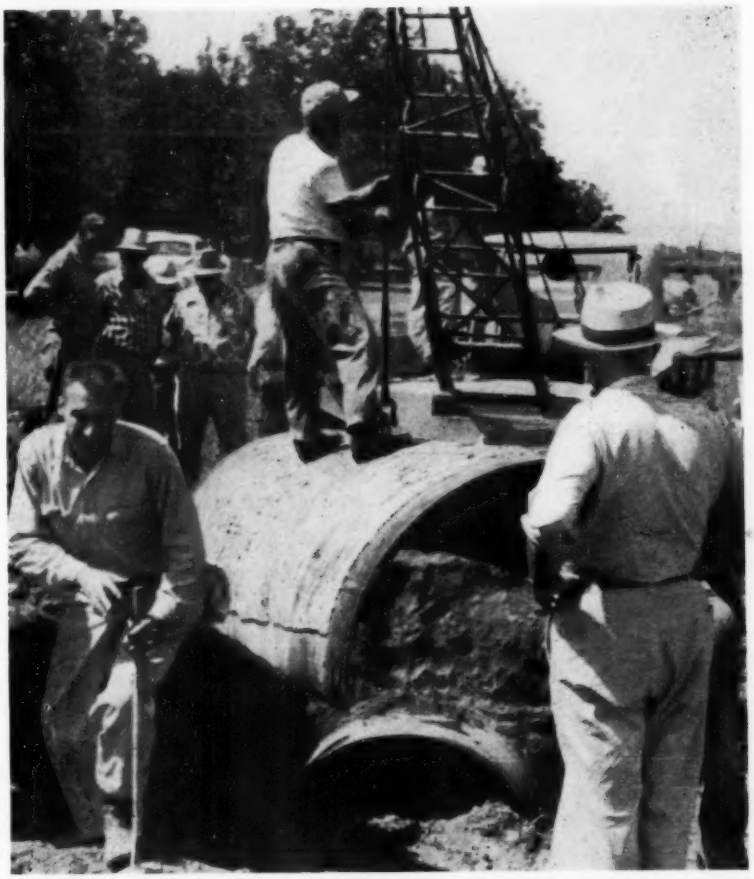
Branch Offices in Principal American and Canadian Cities

neptune

261

By HARRY E. LLOYD, *Manager*
Hetch Hetchy Water Supply
Power and Utilities Engineering
San Francisco, Calif.

San Francisco finds a way to put an extra million gallons of water per day through sections of its Hetch Hetchy aqueduct



The big line had to be opened in order to permit insertion of the cleaning tool.

The Pipeline Is Better Than New

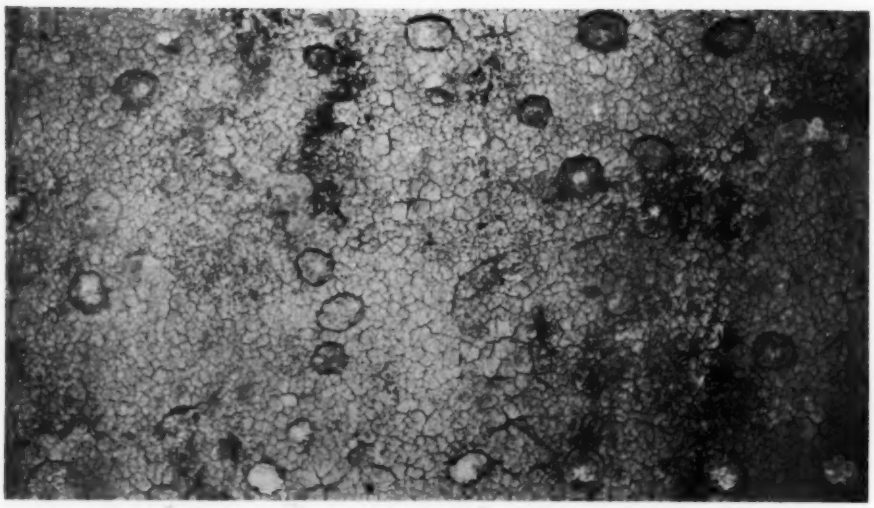
THE San Joaquin division of our Hetch Hetchy aqueduct is smaller by about 2½% than it was when new. Nevertheless, it can transport more water than it has ever been able to carry before. The boosted aqueduct capacity resulted from our cleaning and coating over 3,800,000 square feet of aqueduct pipe wall with cement mortar. As far as we can tell, this job required the largest amount of cement mortar lining ever placed in a single pipeline project.

The line is 47½ miles long, extending across the San Joaquin Valley from the foothills of the Sierra Nevadas to the eastern slope of the Coast Range. Its diameter varies from 56 inches at the eastern or upstream end to 72 inches at its western end. It is fabricated of steel plate varying in thickness from 5/16 to ½ inch. It has arc-welded longitudinal seams and bell-and-spigot joints between adjacent pipe sections. However, all joints are riveted except in the easterly 6¼ miles where they are welded. Each pipe section, after fabrication, was dipped in hot asphalt to give it a 1/16-inch protective coating. The line was constructed from 1931 to 1932 and placed in operation in October 1934.

The line had a top capacity of 74 mgd (million gallons daily) when the water level at the intake was at its maximum level. When the level lowered to a point just covering the intake, the capacity dropped to 70 mgd.

Corrosion Develops

After 18 years of service, the capacity of the line had shrunk to 62 mgd even when the water surface at the upstream end of the pipeline was at maximum level. This repre-



The old coating was badly cracked and mottled with flow-throttling tubercles.

sented a reduction in flow rate of about 16% in spite of the fact that conditions inside the pipe looked reasonably good. An inspection of the pipe indicated rather clearly that we could anticipate further reductions in the future. Whenever the pipeline was taken out of service, and long sections of pipe were emptied, deterioration of the pipe coating began. The coating "alligatored" or shrank, forming cracks that exposed the steel and permitted corrosion to begin.

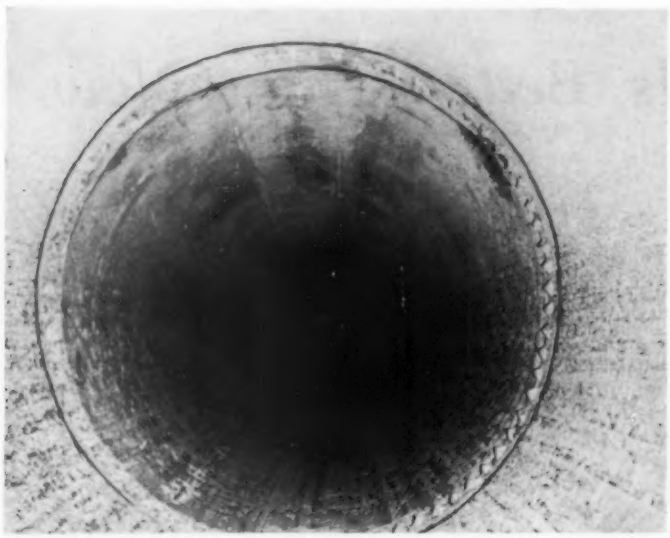
The corrosion appeared in the form of tubercles. These are waste piles of iron oxide, commonly called rust, from corrosion pits on the surface of the plate. Inasmuch as iron oxide occupies a much greater space than the iron before oxidation, a large tubercle may cover a relatively small pit. However, the pit will deepen and eventually create a hole in the plate. The tubercles also roughen the interior of the pipe and reduce the quantity of water that will pass through the pipeline in any given time.

Pipe Cleaning

Renewal of the pipeline first required removal of the flow-checking tubercles, and also the loose asphalt coating so that a cement-mortar lining could be applied and bond tightly to the pipe. To do the work, the city awarded a contract to Pipe Linings, Inc., Southgate, Calif. Cleaning of the pipe was the responsibility of the National Water Main Cleaning Company, of New York City.

For cleaning, the company used a large springlike scraper formed from a number of flat steel bars. The workmen first cut a rectangular hole in the pipe, placed the scraper in the pipe interior, and then welded the hole closed. They then cut a similar hole at the end of the cleaning run to permit removal of the scraper and discharge of the material scraped away. Water was then introduced into the pipeline, moving the scraper along by hydraulic pressure.

The crews used short wave radio to keep the progress of the cleaner under control. The radio provided communication between the men at the cleaning device, and those at the valve controlling the flow of water. The men at the scraper could follow it easily by listening for the noise it made, clearly audible even through 2 or 3 feet of ground.

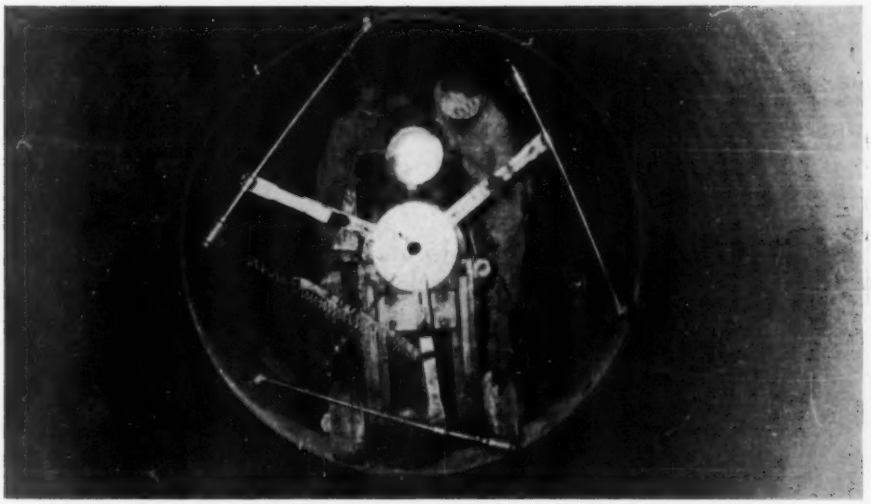


The cleaning tool peeled away old cracked coating exposing the bare steel.

Lining Procedure

After the pipe was cleaned, lining operations began. The lining crew brought a van containing an electric generator to operate the equipment, as well as a mixer, cement, sand, and water. The mixed material was discharged through a hole in the pipe into an electrically-propelled "mud buggy." These holes were spaced at approximately 300-foot intervals to reduce the distance that mortar had to be transported in the pipeline.

The buggy delivered the mortar



The cleaned, lined pipe can carry more water than it did even when new.

through the pipe to the lining machine. This has a rapidly-revolving head that throws the mortar against the pipe wall. The machine also carries trowels on spring-loaded arms that revolve about the pipe interior to smooth the mortar surface. As soon as the mortar sets so that a man can walk on it without damage, another electrically-propelled buggy traverses the pipeline spraying water to maintain a moist condition necessary for the proper curing of the mortar.

Rough Terrain

The pipeline traverses rather rough terrain in the easterly 6 or 7 miles. In places the slope of the pipe was too great for the lining machine to travel under its own power. Under these conditions, the men lowered it by a rope and winch.

Rivets and Joints Covered

As mentioned previously, the joint between consecutive pipe sections is a riveted bell-and-spigot. The bell-and-spigot joint results in a circumferential, triangular-shaped recess in the otherwise cylindrical inner pipe surface, and the heads of the rivets extend into the waterway of the line. Both conditions created turbulence and reduced the carrying capacity of the line.

By relining the pipe, the recesses were filled and the thickness of the mortar lining was increased sufficiently to cover the rivets. The thickened coating tapered gradually to make a streamlined transition.

The work began in 1952 on the westerly 10.8 miles of the line. In 1953, 13.6 miles were rehabilitated; in 1954, 14.3 miles; and in 1955, the last and most easterly section comprising 7.7 miles was completed. Approximately 1 mile of pipe at the crossing under the San Joaquin River was originally lined with cement mortar 1½ inches thick. This lining was examined during the work and found to be in excellent condition.

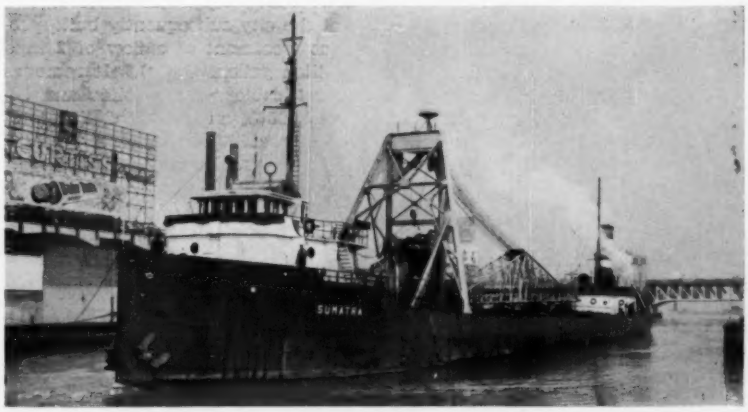
The work was done at a contract cost of $1,167,000 and was paid for entirely from the earnings of the San Francisco water supply system.

Salt by the Shipload

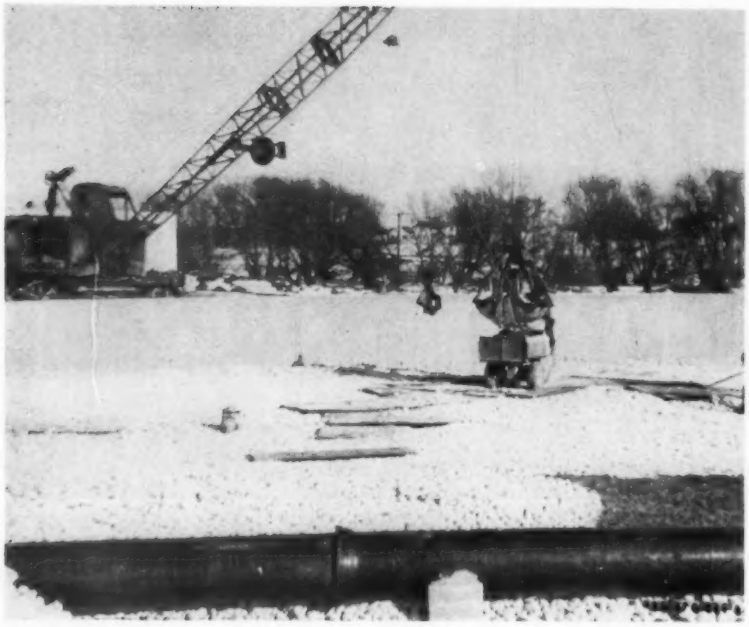
WHEN Chicago orders salt to combat ice and snow problems, full-sized ships have to make the delivery. Last winter, the city ordered 15,600 tons of rock salt from the Morton Salt Company. Part was delivered in two trips by the S.S. Sumatra, bringing 5,500 tons at each visit. The balance came from warehouse stocks and by truck and rail.

Extensive Use

Chicago fights ice and snow on some 800 miles of streets. In addition, the city's Park District clears 205 miles of streets and paths in 165 parks. The Transit Authority also uses salt to keep rights-of-way clear.



Two trips by this ship weren't enough to supply Chicago's salt needs.



Rock used for Watertown's new filters was placed by a "scoot-crete," a small motorized wheelbarrow, to prevent shock, ensure good placement, and avoid broken underdrains.

Watertown, Wis., studies five different ways to enlarge its sewage-treatment plant and increase its purification effectiveness

Two-Stage Trickling Filters Prove Best

PRIMARY treatment just wasn't enough to keep Watertown's liquid-borne wastes from causing trouble to Wisconsin's recreationally important Rock River. The old plant was built in 1932 to a sturdy, efficient design. However, after serving for 18 years, it began to show evidence of distress. In 1950, the Wisconsin State Board of Health conducted a survey at the request of the city and found the river to be rather seriously polluted, particularly during periods of low flow. The problem was traced to the plant outfall. As a result of this situation, city officials called on the services of Consoer, Townsend and Associates, Chicago consulting engineers, to help guide them into proper remedial measures. Watertown lies about 45 miles west of Milwaukee. Its population is about 12,500 in the city itself, but its sewerage system serves an urban area contributing sewage in volume and strength equivalent to a population of nearly 21,000.

The engineers knew that some type of biological oxidative treatment would be required, and studied five types. These included various arrangements of trickling filters as well as activated sludge and its modifications. Analyses showed that the two-stage trickling-filter treatment seemed best fitted to the type of wastes to be purified, and to the city's pocketbook. The plant additions that they recommended, and that the city subsequently built, provides treatment of a flow of 2 mgd (million gallons daily). It removes all settleable sewage solids and between 85% and 90% of the total decomposable matter that creates pollution problems.

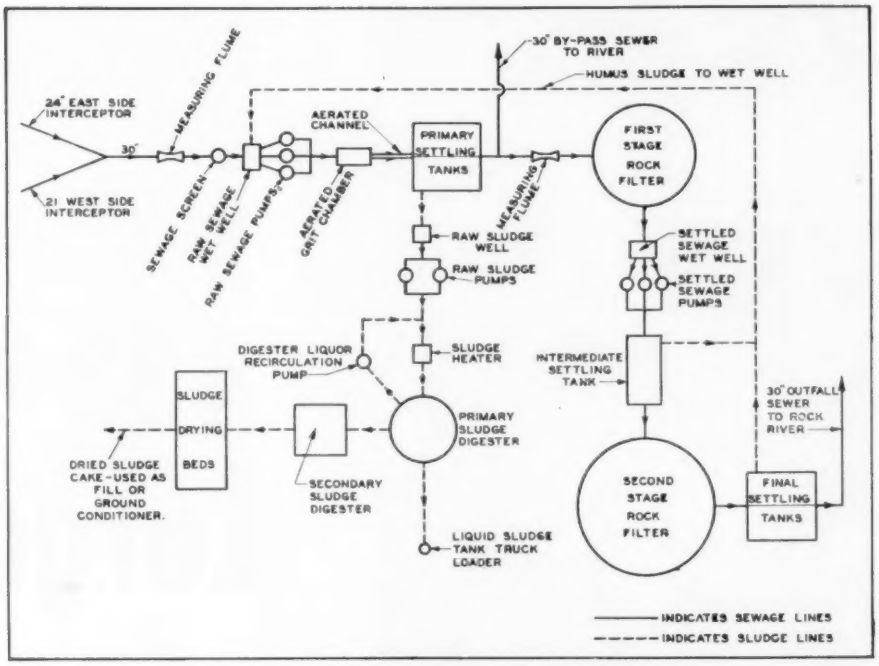
The Plant

In the plant that they designed and that the city eventually built, the sewage enters through two interceptors, 21 and 24 inches in diameter, and passes through a Parshall measuring flume. This has a 9-inch throat and is equipped with a Builders-Providence Chronoflo Transmitter. Flows are telemetered to a time impulse recording, indicating, and integrating instrument.

The sewage next passes through a Chicago Pump Company 25M Comminutor that shreds the large solids into small, easily-handled particles. This unit can receive a maximum flow of 6 mgd.

The sewage then flows to a wet well where three American Well Works raw-sewage pumps pick it up and send it through a cast-iron force main to the aerated grit chamber. These pumps vary in capacity from 1.4 to 2.5 and 3.7 mgd, controlled by Healy-Ruff Roto-Trol float controllers. This permits them to deliver a maximum of 5 mgd with reserve capacity if needed. All are driven by electric motors.

The pumps send the sewage to an aerated grit chamber with a detention period of 10 minutes based on the design flow of 2 mgd. The grit chamber is of the Chicago Pump "Aer-Degritter" type. The tank is equipped with a Chicago Pump Company swing-diffuser assembly, and



The plant design follows this general plan.

uses two 250-cfm Roots-Connersville positive-displacement blowers to provide air. A Chain Belt conveyor removes the grit from the unit. This step in the treatment process also removes some of the grease and helps to freshen the sewage and make subsequent treatment easier.

The sewage then passes into the two old, but enlarged, rectangular primary settling tanks where the settleable solids are removed and pumped to the digestion tank. These two tanks are 84 feet long and 16 feet wide and have a 12-foot liquid depth. The surface area loading is 930 gallons per square foot of area per day. The detention period is 2.3 hours.

As the sewage, free of its easily settled polluting solids, flows out of the tanks, it passes through a second Parshall flume. This unit has an 18-inch-wide throat and is equipped with the same type of measuring devices used in the raw-sewage flume. From here, it flows to the first-stage filter, 90 feet in diameter, and then through an intermediate settling tank to the second stage, 145 feet in diameter. Both filters have a 6-foot rock bed and are equipped with American Well Works rotary distributors.

The rock was placed in a rather unusual manner. A crane with a clamshell bucket deposited the rock on a special motorized "scoot-crete" machine ordinarily used to place concrete. This deposited the stone on the tile underdrainage system without shock or impact and prevented the possibility of tile breakage that would be difficult to detect and also the segregation of the filter rock. The tile underdrains are Natco Unifilter blocks.

The first-stage filter is designed to receive 110 pounds of five-day BOD per 1,000 cubic feet of rock. The second-stage is designed for 14 pounds. The primary settling tank, first-stage filter, and settling tank are expected to remove 64% of the five-day BOD. The remaining BOD loading is applied to the second-stage filter.

As indicated above, a rectangular intermediate settling tank has been provided between the two filters. It measures 78 feet long and 16 feet wide with a liquid depth of 8 feet. It provides a detention period of 0.72 of an hour and a surface settling rate of 2,000 gallons per square foot per day. It uses Chain Belt sludge-collecting equipment.

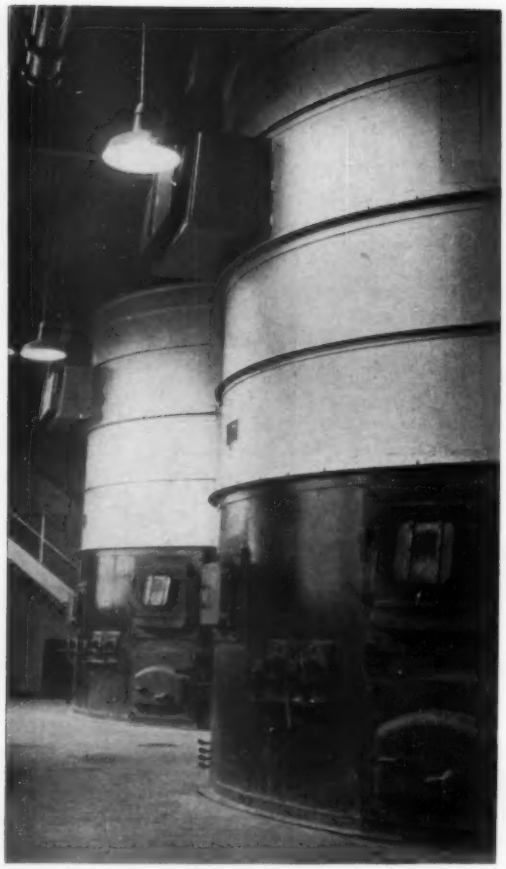
Detention Period

Following the final stage filter, the sewage flows to a pair of final settling tanks. These provide a detention period of 1.44 hours based on the design flow rate of 2.5 mgd and a surface settling rate of 1,000 gallons per square foot per day. These tanks are also equipped with Chain Belt sludge-removal equipment. The effluent from these tanks flows through a 30-inch outfall into the Rock River. Purification provided by these filters is sufficient to eliminate any need for final chlorination.

Sludge from both the intermediate and final settling tanks flows by back to the raw-sewage wet well where it is pumped with the raw sewage and removed from the primary settling basins and transferred to the plant's primary and secondary digesters. The plant has a new circular digester, 65 feet in diameter with a 24-foot sidewater depth and provides a total effective volume of 64,600 cubic feet. The old digester is 40 feet square with a 15-foot sidewater depth and an effective volume of 19,500 cubic feet. Both are equipped with Pacific Flush Tank floating covers. Before the sludge enters the digesters, it passes through a Pacific Flush Tank external sludge heater rated at 370,000 BTU per hour.

To dispose of the digested sludge, the city has purchased a tank truck that will distribute it in liquid form on vacant land along the Rock River. The original sludge beds still are available and provide 14,000 square feet of area.

The new plant was built under the administration of Mayor James A. Fitzpatrick. Dean Van Ness is city manager, and Floyd W. Usher is city engineer.



The enlarged plant has two large furnaces in the new portion of the building and a smaller furnace in the old. Note the use of overfire air ducts to help improve burning characteristics.

433% Larger

Babylon, N. Y., rebuilds its ten-year-old, 90-ton incinerator to 390-ton capacity

THE old incinerator serving the Town of Babylon, N. Y., wasn't really old. It went into service only 10 years ago, using two 45-ton furnaces charged directly from the floor. However, since 1946, this town, in the New York metropolitan area, began to pop with people, and the Babylon plant aged in a hurry.

Under these conditions, weaknesses in the original plant quickly became evident. The small furnaces had been installed with no eye to the future. Charging openings were small, and the floor-dump plan required an excessive amount of hard, physical labor and provided virtually no storage space. Moreover, the method of ash removal was awkward. The operators had to shovel it out manually, and the smoking, unquenched ash contributed its share to an already difficult plant operation.

As early as 1952, when the plant was only six years old, Town Commissioners realized that something would have to be done. To prepare corrective measures, the town called on the services of Henry W. Taylor, consulting engineer, Freeport, N. Y.

His first task was to decide how large a plant was needed. A study of the town's characteristics and its rate of growth convinced him and the Town Board that a plant with a rated capacity of 390 tons would do the job.

The next job was to adapt the present plant to its new, larger duties. The old building was sturdy, with a good, solid chimney. Mr. Taylor, therefore, arranged to make full use of it. To supply the required burning capacity, he placed a new 90-ton furnace in the old building and two 150-ton units in a new structure. All are Morse-Boulger units.

Redesigned Plant

The central portion of the enlarged plant houses a refuse pit, 80 feet long, 27 feet across, and 20 feet deep to the truck tipping level. This should be able to hold 250 tons of refuse when level full, and possibly 100 additional tons when refuse is heaped against the back wall.

A 3½-ton P & H bridge crane with a 2½-yard Blaw-Knox bucket spans this storage pit and delivers the refuse to the furnaces at each end. Since the floor levels of the old building were already fixed, the new 90-ton furnace in the old building extends above the original charging floor in rather unusual style.

Furnace Placement

The original design placed the furnaces squarely on the basement floor, allowing no space beneath the furnaces for proper residue quenching or its mechanical removal to a bin. By setting the new furnace on the next higher existing floor level, the former furnace room could be converted to a residue basement.

The two 150-ton units installed in the new portion of the building are equipped with rather unusual charging-gate assemblies. These rest on the charging floor rather than beneath it, as is the case in most in-

Each furnace has a Morse-Boulger cone and stoking arms.

Charging gates and hoppers are raised for simple maintenance.

cinerators. This makes them much more accessible for maintenance, less subject to heat damage, and easily available for observation. With this arrangement, the charging gate stands above a concrete floor so that it can easily be removed for relining. All three furnaces have Beaumont-Birch electrically operated charging gates.

Cylindrical Furnaces

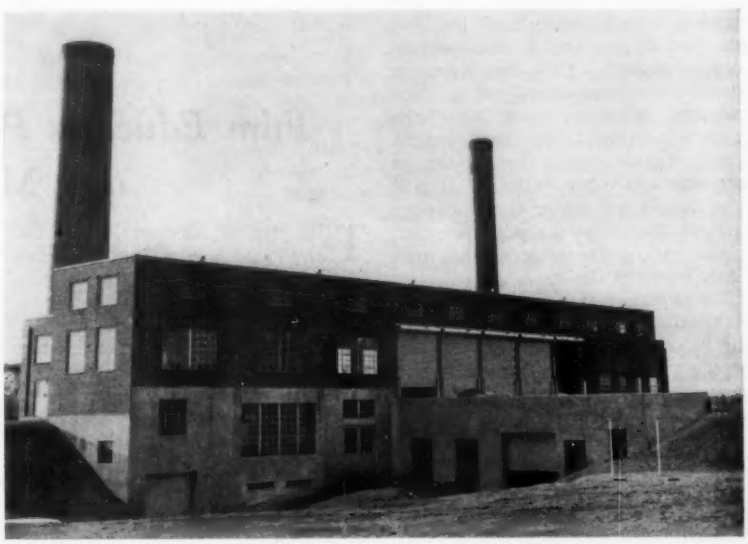
As mentioned, the furnaces are all Morse-Boulger cylindrical and mechanically stoked units with the rotating cone and stoking arms to permit more thorough burning of the refuse. The furnace grates were designed on the basis of 83½ pounds of refuse burned per square foot of grate area per hour. Each furnace has a thermostatically-controlled port at the top to introduce air over the fire and cool the gases. This reduces excessive temperatures that slow up charging operations, provides secondary air for high rates of combustion, and protects firebrick linings.

The furnaces discharge their gases of combustion to baffled expansion chambers designed to create turbulence in the gases and throw out the fly ash. The two large furnaces have a separate chimney; the single, smaller furnace utilizes the old chimney with a slightly extended height. All three furnaces have ash-quenching troughs, each equipped with Beaumont-Birch conveyors that lift the burned ash to an elevated bin for truck removal. Each furnace has two troughs; the ash hoppers have swinging deflectors that direct the ash to one trough or the other, thus providing one for a reserve unit.

All refuse trucked into the plant passes over one of two 20-ton truck Howe scales to keep an accurate record of quantities burned with the exception of small amounts brought to the plant by private cars. The plant has a wash and locker room, a small lunch room, kitchen, and office.

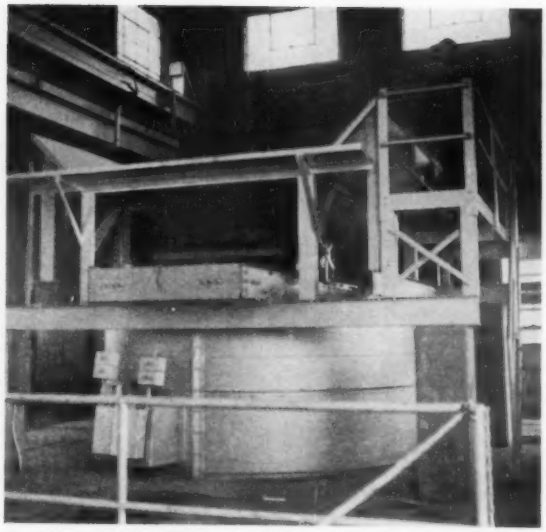
The incinerator cost a total of $900,000. Generously estimating that the old building gives the total project a capitalized value of $1,000,000, this means that the project was built for the very reasonable figure of $2,564 per ton of rated capacity. On test, the three furnaces were able to burn thoroughly at 23% over rated capacity. The Morse-Boulger Destructor Company, of New York City, installed all the mechanical equipment including the incinerator furnaces and the cranes.

Construction also included an 80-foot-square maintenance garage, the roof to act as a platform for trucks bringing the refuse to the storage pit. Since the incinerator cannot conveniently use public water supply, the plant has an independent



Babylon's new incinerator building blends neatly and inconspicuously with the old.

Trucks weigh in their loads before going to the incinerator.



The new furnace extends through the plant's existing floor.

supply. A Johnson turbine pump lifts the water from an 80-foot well to a storage tank outside the building. From here, a second pump transfers the water to a hydropneumatic tank for pressure service throughout the plant at an average of 50 psi.

Wrought-iron hot-water coils and headers absorb heat from the flue gas flow in one end of the combustion chamber. This hot water is stored in a large basement; a small elevated hot-water tank has been installed beneath the roof beams. These tanks supply hot water to showers and other fixtures. It will also supply hot water to the copper coils in the cesspool sludge-digestion tanks for conditioning of this partially digested sludge.

The cesspool-disposal facilities form an unusual added feature to the Babylon installation. Since much of the town area is unsewered and served by cesspools, periodic pumping is necessary which presents a problem of nuisance-free disposal. The plant will be supplied with three tanks not unlike standard digesters of a sewage-treatment plant. The first tank has an inside diameter of 20 feet and stands 23 feet high; the second's diameter is 24 feet and height, 21 feet; the third has the same diameter but is 17 feet high.

Little if any design data are available as a guide for the operation of these tanks. Presumably the material taken from the cesspools is digested rather thoroughly and will be subject to a variable degree of additional decomposition. However, the designers expect to use the center tank to concentrate the cesspool products, draining away the watery supernatant. The concentrated sludge will then be pumped to a second tank that will be heated to induce further digestion. After retention, it will be transferred to the third tank for decantation and storage. The digested sludge will be discharged to open sand beds for drying and use at the plant site as well as at town parks and beach developments for fertilizer.

The entire project represents work initiated by the Town Board. Donald E. Muncy is supervisor; Charles Voege serves as plant superintendent.

Film Educates Public on Weights and Measures

THE city of Newton, Mass., has produced a film that describes the work of its city sealer of weights and measures. The film is titled, "Your Weights and Measures Department in Action." In conjunction with a short textbook of the same title, this color and sound-narrated motion picture has been shown to over 700 ninth-grade pupils of the Newton schools. Both were produced by the Newton Weights and Measures Department. City Clerk, Monte G. Basbas and Sealer, J. Ellis Bowen contributed many off-duty hours to the production of the film at a cost to the city of only about $100.

The film illustrates how the department protects the pocketbooks of producer, manufacturer, retailer, and customer. The sealer is shown inspecting and testing, at least once annually, every weighing and measuring device used commercially within the city. Also included are portrayals of such activities as inspection of trucks, licenses, and clinical thermometers, and of trial weighings of packaged goods. The sealer is also shown testing factory scales.

Mechanized Emergency Repairs

Flint, Mich., water maintenance crews emphasize mobility

When not on emergency repair assignments, the Hydrohoe, used by Flint's Water Department, performs tasks such as loading or stockpiling gravel.

Repair hydrant at Fifth and Main! Leak in main at Grand and Market—fix it!

Like storm warnings for seafaring crews, these are typical alerts for emergency maintenance crews of municipal water systems throughout the nation. They must be heeded immediately to avert a more serious danger. In the highly industrialized city of Flint, Mich., with its population of 190,000, mobility is the key to the handling of these spot assignments in the maintenance of its important water distribution system.

Listed among the maintenance tools used are a ⅜-yard Bucyrus-Erie Hydrohoe; a 3-ton (lifting capacity) Bucyrus-Erie Hydrocrane; and 19 Chevrolet trucks (five ½-ton, nine ¾-ton, one 1-ton, and four 2-ton units). Additional equipment includes two air compressors; four Homelite and two other pumps; a Westinghouse and a Homelite generator.

Water Source

Flint's main source of water is the Flint River, a tributary of the Saginaw which empties into Saginaw Bay on Lake Huron. The river's north and south branches come together about 20 miles east of the city before traversing the city and flowing on to the northwest. Enough water is drawn to serve approximately 50,000 meter accounts within an area of 29½ square miles. Transmission mains which carry the water to the consumer vary from 4 inches to 36 inches in diameter but consist primarily of 8-inch-diameter pipe.

In servicing the Flint area, the versatile workhorse of the water department's mobile fleet is the H-3 Hydrohoe. Purchased early this year, it is equipped with self-powered unit and wrist-action dipper. It can be equipped with a crane boom for lifting assignments or clamshell work. The three-year-old Hydrocrane, previously used for this type of work, is now used chiefly for clamshell and standby emergency duties when the newer machine is on the road.

Scheduled Assignments

With travel speeds up to 50 mph, these machines shuttle back and forth from yard to job on emergency work or from job to job on scheduled assignments. The Hydrohoe may be put to work in four or five different places in one day and is on call around the clock. Because of its rubber-tired mobility, moves can be made without a trailer, a cost- and time-saving feature which has long impressed Flint officials.

The mobile unit handles such duties as lowering valves, setting-in hydrants, digging up and lifting out of hydrants, excavating for new service lines, opening up and getting at leaks in mains, digging for manholes, running main stubs, pipelaying, and trenching on short lines. On a recent rush job, the Hydrohoe relocated 230 feet of old 8-inch water main to clear the way for a new four-lane highway.

When unassigned to outside work, the units are busy in the yards. Trucks arrive regularly throughout the day for gravel to be used for fill after emergency work. They also return frequently for pipe. Either of the hydraulic machines is equipped to load the trucks, and both can be used to unload flatcars and to stock pipe in the yards.

In charge of maintenance division of the Flint Water Department are Distribution Supervisor W. F. Marklund, and his assistants, Ed Wegner and Rolland Shilling.

This sturdy, meticulously designed arterial street was built 23 years ago to standards that would be considered excellent today.

Local Improvement Districts—— A Street-Building Tool

Seattle, Wash., uses a financing procedure that permits the construction of permanent-type street improvements at competitive costs

About the Author

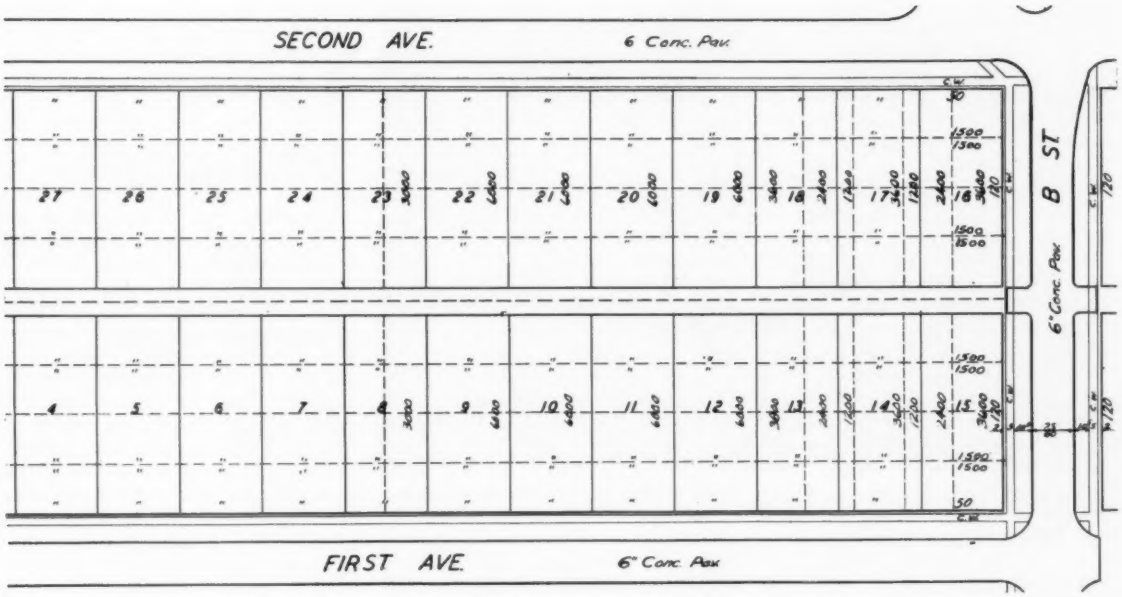
The author, P. N. Royal, originally planned to be a chemical engineer when he studied at the University of Washington. However, after graduation, he found himself practicing civil engineering principally and today is an expert in a field generally assigned to the legal profession. He has served the city since 1922.

By P. N. ROYAL
Principal Engineer
Seattle, Wash.

ANY engineer agrees that a city must have the right equipment available to build a creditable street improvement. Certainly, graders, excavators, pavers, and power shovels are dramatic and exciting to watch. But before any of these can move out of the yard, the engineers or administrators responsible for the work have to use one other vitally important tool. This, for want of a better name, might be labeled a "money uncoverer."

Seattle has a "money uncovering tool" that has done an excellent job of helping us get good, sturdy streets. We have no patent on it and will gladly supply plans and specifications to any city that would like to build one like it. Our "money uncoverer" goes by the name of Local Improvement Districts (L.I.D.). They aren't the easiest of their kind to build, but once you have them assembled correctly you have helped your entire street program immeasurably.

The L.I.D. system permits the building of streets to standards that will anticipate long, troublefree life. In general, money invested in long-lived street improvements in areas where you can expect the service to be needed for years to come is invested wisely. This is particularly true since our economic history shows rather clearly that the value of money depreciates steadily over the years, and has been depreciating ever since Revolutionary War days. In contrast, the value and usefulness of streets increase as the popularity of the automobile rises. Good streets are good investments, and when they are financed by properly prepared Local Improvement Districts, you will find plenty of hard-headed financiers ready to purchase L.I.D. bonds



Dotted lines indicate boundaries where the assessment changes on the basis of distance from the street being improved.

at par, or at a profitable premium.

Let me give you an example of the way that poor streets drain the taxpayer's dollar. In one famous Midwestern city that I had the pleasure of visiting recently, residential streets and even heavily traveled arterials are provided with gravel surfaces and treated with light oil each year. The cost of this oiling is included in the general tax levy which now stands at the amazing figure of 153 mills, or over three times the levy in Seattle. Moreover, the people in Seattle would be shocked if they had to be content with oiled roadways without curbs and gutters. Obviously, the people in the city I visited are paying for a lot better street than they are getting.

Need for State Legislation

Unfortunately, many cities, particularly those in the South, will have to do a lot of selling in order to get this L.I.D. type of financing. Homestead and veterans' exemptions make it impossible to collect liens against the property and thus make the bonds a poor risk. There is a great need generally for state legislation that will enable the citizen to obtain street improvements in a manner, fair both to the abutting property owner and to the city. Many city officials have expressed a wish for state legislation similar to the type that the Washington legislature has supplied to us.

This L.I.D. statute essentially means that the property benefited by the improvement pays the assessment in proportion to the benefit received. The statute was enacted in 1911 and has been amended only slightly since that date. This speaks well for its basic principles.

Under the terms of this statute,

One of Seatle's streets was built with an eye to its commanding view of the harbor.

we can consider that property enjoys benefits from a street improvement as far as the center of the block away from the improvement. We can measure the benefit by dividing this benefited area into five zones and assigning weighted averages to each zone. The benefits, of course, decrease in proportion to the distance from the street being improved.

Obviously, not every parcel of property receives benefits to the extent that the assessments calculated in this way would indicate. In such circumstances, the City Council has the authority to grant relief. The true benefit, of course, is the increase in the value of the property itself. Some cities, to fully protect the security of the assessment roll, take sworn testimony from qualified real estate appraisers at the same time the improvement is ordered to show that the property value is increased in an amount not less than the assessment.

Statute Principles

The statute has other important principles. It places the credit of the city's General Fund behind the bonds issued to finance the improvement. It also revises the statutory limits on bonds issued for improvements. The law now provides that the portion of the cost of an L.I.D. improvement to be assessed to all of the property cannot exceed a figure equal to the actual value (twice the assessed value) of the real property in the district plus 25% of the actual value of the improvements on the property. The unpaid principal of any assessments previously levied for sewers, water mains, and similar improvements is then subtracted. This law effectively prevents the pyramiding of assessments to the point of confiscation.

The law also permits us to include disconnected streets and alleys in one local improvement district, provided that the cost of each unit is determined and assessed separately, and provided also that these units are in the same general locality. This permits us to plan larger jobs that interest more contractors and stimulate more competition. It reduces our engineering costs, and makes it possible to overcome certain labor difficulties.

The L.I.D. plan saves the taxpayer substantial costs. As nearly as we can calculate it, he gets his streets at a cost not less than 20% lower than he would without it. In a number of instances, assessments for street improvements are no greater now than they were prior to the war and, in some other instances, than they were during the 1928 period.

A property owner can protest an assessment, and will if he is convinced that it is unreasonable. He quickly detects inconsistencies and even more quickly recognizes incompetence of the assessing official. We have taken especial care to avoid these pitfalls and have had to defend only about five or six court actions brought against L.I.D. assessment rolls in the last 32 years. Only two have been filed since 1927. During this period, thousands of districts have been created and millions of dollars have been spent in this type of improvement.

The city frowns on substandard improvements financed by L.I.D. or other means. Real estate developers continually submit plans for water mains and pavements obviously built with little consideration for the ultimate owner. These promise a never-ending maintenance problem whose ultimate cost is many more times greater than proper installations built to adequate standards.

However, we have found that many asphalt, brick, stone, and concrete pavements constructed in the early days of the city can be rehabilitated by only a nominal resurfacing improvement. These old streets represent outstanding engineering practice, and surfacing prolongs their lives for many years.

We conduct this work with our own staff and equipment. Because of its nature, we can rebuild these streets at a much lower cost than we could by contract. No assessments are levied for such resurfacing. The entire cost is paid from our gas-tax fund on the theory that property owners paid for the original improvement and that the cost of resurfacing merely represents what the city saves in attempting to maintain the old pavement.

Despite the favorable legislation that gave us the L.I.D. system of financing, Seattle still does have its problems with the state legislature. At present, Washington cities receive approximately 15% of the first 5 cents of gas taxes paid into the motor vehicle fund, plus construction and maintenance by the state of primary and secondary highways within the city limits. These taxes are distributed to the cities on the basis of population. Since a greater percentage of the money originates in cities, we certainly feel justified in asking for a more equitable share. Certainly, the city's need can never be satisfied under the present method of allocation. Traffic congestion produces an insatiable demand for remedial measures—all of them costly.

Annexation also shortchanges the cities under Washington law. In some instances, according to the statute, more than a whole year must elapse before the city realizes any per capita income from these very necessary annexations. In the meantime, the city faces the necessity not only of maintaining the streets in these areas but of constructing new ones. The county, however, continues to receive its gas-tax revenues from the annexed area for two years.

Nevertheless, the L.I.D. system of financing is a fine advantage. Any city that can take advantage of its fair and equitable terms will strengthen its position and give itself a fine system of streets if it does. It has been a very practical "money-uncovering" tool.

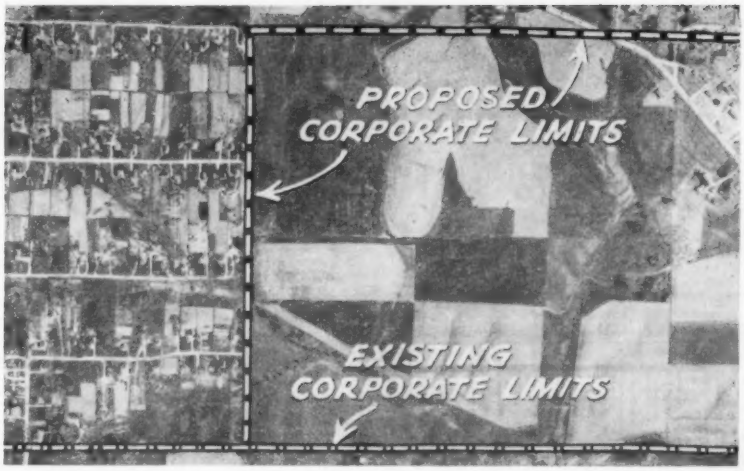
Syracuse, N. Y., Tests Green Corrosion Inhibitor

GREEN though snow-covered, Tipperary Hill—in this case, a section of Syracuse, N. Y.—was the site of a multipurpose experiment project this winter. Under the supervision of Commissioner Charles F. Stanton, the city studied the rust-inhibiting qualities of Banox when added to snow-melting salt. The chemical is a noxtoxic polyphosphate compound with a harmless green tint to give the melting slush an emerald glow. The color indicates to motorists that their Department of Public Works is trying to halt suspected salt corrosion of their cars.

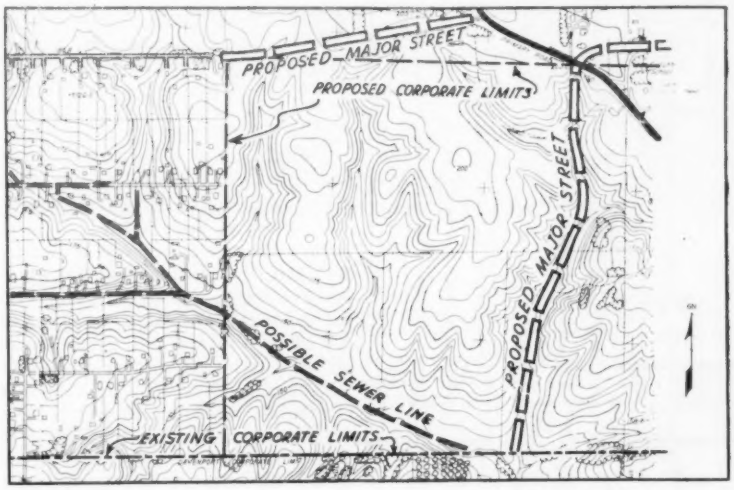
Guinea pig for the test was a police car operating exclusively on Tipperary Hill and carrying eight automobile body steel panels fastened to the underside of the front fenders and bumper. Controls are two other police cars also fitted with panels that are cruising the city's untreated streets. At the end of the 100-day trial period, panels will be removed and checked. Results will be used as a base for the city's preparation for the 1956-57 winter snow and ice storms.

Calgon, Inc., of Pittsburgh, Pa., manufacturer of the inhibitor, and General Motors Corp., are cooperating in the experiment. G-M is testing the panels with various kinds of automobile body finishes.

Aerial Topography Speeds Annexation Study



Aerial survey (above) was used to develop topographic map (below) in order to locate future extensions of city services on land to be annexed to Davenport, Iowa.



Davenport, Iowa, gained time in its annexation program by using aerial topos

By BURL A. PARKS
Plan Engineer
Planning Commission
Davenport, Iowa

TOPOGRAPHIC maps prepared from aerial surveys quickly revealed the particular fringe areas adjacent to Davenport that could be sewered when the Planning Commission studied possible annexations to the city. The studies were begun when it became apparent that there was a growing lack of land suited for industrial development within Davenport.

According to Iowa statutes, municipalities intending to annex fringe lands must prove that they can provide services to the areas to be absorbed. Faced with the necessity of obtaining the needed information quickly, we combined a bit of aerial luck with a contract for a set of topographic maps, and we were soon able to satisfy the Iowa laws.

The luck came in the form of a series of aerial maps that were being flown in our area by the federal government at just the time that we needed such information. By contacting Alster and Associates who were doing this government work, we were able to cut costs since their equipment was already in the area.

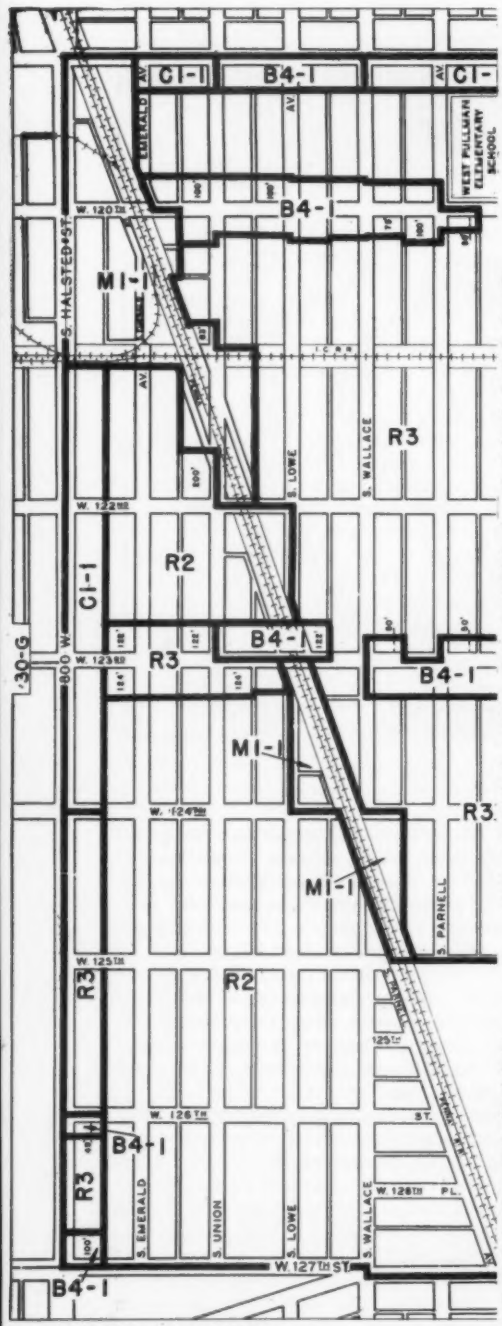
The basic annexation studies required the preparation of many map studies showing information on land use, population, assessed valuation, schools, fire and police facilities, as well as information on proposed sewer and street extensions. A mere glance at the completed aerial topo maps told us whether or not we could logically serve questionable areas with sewers. In extending our major streets in the newly annexed territory, we used prints of the maps and located proposed street extensions right on the prints. Since the maps contain the location of all buildings, driveways, water-ways, power lines, and other features that have a direct or indirect bearing on proper street locations, we had all the necessary data for choosing the best locations.

The maps were prepared at a 200-feet-to-the-inch scale with a 5-foot contour interval. They are vertically accurate to within one-half of the contour interval and horizontally accurate within 6 feet of actual locations of ground features and monuments. This, of course, is more than adequate for any type of preliminary engineering study.

Since the completion of the annexation study, our office staff had made excellent use of the maps in considering new subdivisions. They have also been very helpful in consultations with the general public.

Chicago Studies Its Proposed New Zoning Ordinance

CHICAGO ZONING ORDINANCE



New code contains techniques of interest to big and small communities

By WILLIAM B. OWEN, JR.*
Planning Consultant, Chicago, Ill.

CHICAGO'S City Council is currently considering the adoption of a sweeping proposal for rezoning all of the Windy City. In doing so the Council has joined the hundreds of city legislatures throughout the country that already have or are just starting to revise their zoning codes to meet rapidly changing conditions within their cities.

How Chicago's proposed ordinance will fare in the hands of the city's councilmen is yet to be seen. On hand for all to see now, however, is the new ordinance which was drawn up by a technical staff and group of consultants retained by the Council's Committee on Buildings and Zoning.

Like all zoning ordinances, Chicago's is tailor-fitted for local conditions. But the techniques proposed are in many cases applicable to similar conditions in other cities. Some noteworthy proposals are made, and latest techniques are used. Here, then, are the highlights of the new zoning regulations recommended for the nation's second largest city.

Industrial Performance Standards

Most significant of the rezoning proposals is probably the new performance code for Chicago's industry, formulated expressly for the rezoning program by the Armour Research Foundation of Illinois Institute of Technology.

The proposed performance code is designed to replace the traditional lists of prohibited uses with precise standards for defining and controlling industrial nuisances and hazards. Under the proposed scheme, three basic manufacturing performance districts—M1, M2, and M3—are established.

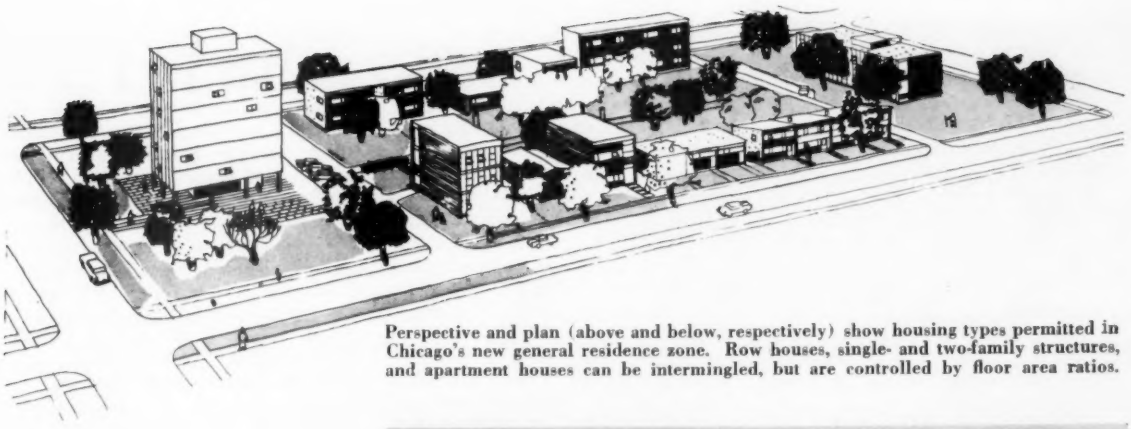
Each district is distinguished from the others chiefly in terms of the level of industrial nuisance and degree of hazard permitted in that district. M1, with the highest performance standards, is designed to accommodate operations virtually nuisance-free, as typified by the modern "ranch-type" plants — clean, attractive, and good neighbors to residence and business. M3, at the other extreme, is the "heavy industrial" district designed for uses such as steel mills and so it has relatively low performance requirements. M2 will be an intermediate district.

Incentives Created

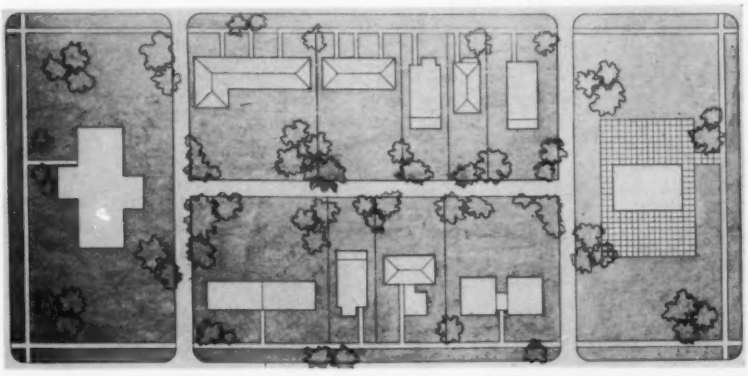
Under the proposed new performance code, an individual manufacturing operation will be permitted in any "M" district, regardless of the product produced, if it can meet the performance standards of that district. Thus, new incentives will be created for manufacturers to "clean house" and improve industrial performance in order to gain the right to locate on choice sites in the more restricted districts.

The list of industrial nuisances or hazards covered by the proposed performance code includes: noise, vibration; smoke and particulate matter; toxic or noxious matter; odorous matter; fire and explosive hazards; and glare or heat. Nuisance determinations will be made either at or within lot boundaries or at district boundaries, depending on the

EDITOR'S NOTE: Mr. Owen was formerly Chief Analyst for the Chicago Rezoning Staff.



Perspective and plan (above and below, respectively) show housing types permitted in Chicago's new general residence zone. Row houses, single- and two-family structures, and apartment houses can be intermingled, but are controlled by floor area ratios.



type of nuisance and the district in which located.

Performance standards for two classes of nuisance—noise, and smoke and particulate matter—being susceptible of accurate measurement are spelled out in quantitative terms in the new code. Permitted noise thresholds are defined in terms of decibels, or loudness, in relation to frequency, or pitch. Measurements will be made with a sound level meter and associated octave band filter. Particulate matter will be restricted in terms of hourly emission in pounds per acre of lot area, while in addition, smoke will be controlled by density, as measured by the Ringelman Chart, in relation to duration of emission.

Earth-shaking vibrations, though capable of being measured, are difficult to predict in advance of the location of equipment because of wide variations in soil conditions and, therefore, in transmitting characteristics. For this reason it was not considered feasible to establish values for vibration in the new code; instead, this nuisance will be controlled by requiring intense vibration producers to be set back specified distances from lot lines or district boundaries.

Regulation of Odors

Odors are proposed to be regulated on the basis of their detectability at lot lines or by public nuisance and welfare clauses. Toxic and noxious matter will likewise be regulated by nuisance and welfare clauses. Sources of glare and heat in the vicinity of property lines in the M1 and M2 districts will be required to be screened in such a manner as not to create a public nuisance or hazard. Lastly, fire and explosive hazards will be controlled by classification of materials permitted in each district supplemented by storage and setback requirements.

Business and Commercial Zoning

In rezoning Chicago's business and commercial areas four levels of shopping centers have been proposed as follows: (1) small "local" centers limited to the sale of daily household essentials; (2) "restricted" shopping centers offering a wide variety of goods and services in small stores but excluding large establishments that are traffic generators such as major department stores; (3) a "general" shopping center for large establishments; and (4) the central business district, catering to the shopping needs of the entire city and metropolitan region.

In the more restricted districts the new ordinance proposes to limit the gross floor area of individual business establishments. Thus, in small "local" centers, no establishment will be able to have more than 5,000 square feet of floor area. In "restricted" centers, the limitation per establishment will be set at 12,500 square feet—large enough for a supermarket but not for a major department store. By excluding large establishments that generate heavy traffic volumes from the local and restricted centers, the new limitations are designed to protect surrounding residential neighborhoods. Only in the major centers will the direct restrictions on floor area be removed.

The new ordinance proposes to regulate the physical grouping of the different businesses in the various shopping centers. Uses that cater to the same customers and tend to create cross traffic between establishments will be required to be grouped together in the same district. Incompatible uses, by contrast, which create interruptions in the natural flow of trade and so hurt retail business will be segregated in separate districts. Thus to promote an orderly arrangement of uses, three classes of use districts—"retail," "service," and "commercial"—will be established at all but the "local" shopping center levels. Included among the "retail" uses are those that the housewife patronizes during a typical shopping trip. "Service" uses include gas stations, theatres, funeral parlors, etc., while most representative of the "com-

R3 GENERAL RESIDENCE DISTRICT B3-1 TO B3-5

mercial" uses are establishments devoted to limited light manufacturing, repair, and cleaning, as well as automotive sales and services. Although all three classes of uses—"retail," "service," and "commercial"—are needed and are permitted in most business areas, their segregation within the centers is deemed essential if an orderly and beneficial arrangement of Chicago's business land uses is to be maintained.

As in many new zoning ordinances, building bulks will be controlled in all districts by the simple and flexible device known as the Floor Area Ratio.*

A Unique Feature

One of the unique features of Chicago's F.A.R. proposals is the system devised to induce builders to provide more openness, light, and air around large buildings in the central business district. Within this area, separate sectors have been assigned a basic F.A.R. of 12 or 16. However, these basic ratios can be augmented by additional F.A.R. "premiums."

On properties facing large public open spaces, such as Grant Park or the Chicago River, a 15% increase in the basic F.A.R. will be permitted. Extra F.A.R. "premiums" will also be allowed for providing pedestrian colonnades under buildings to a depth of 20 feet back from the street frontages. The provision of setbacks at upper floors and the preservation of open spaces unobstructed to the sky at the ground floor will also be bases for F.A.R. "premiums."

General Residence Districts

Eight new Residence Districts are proposed for rezoning Chicago—two "single-family" districts, and six "General Residence Districts" that will be unrestricted as to dwelling type. Each proposed residence district is assigned a floor area ratio ranging from 0.5 in the R1 and R2 single-family districts to 10.0 in the R8 General Residence District. Likewise, to control population density, a specified amount of lot area per dwelling unit is prescribed as a minimum in each district. This varies from a requirement of 6,250 square feet of lot area per dwelling unit in R1 to 115 square feet of lot area per dwelling unit in R8, and will apply both to new construction and to conversion of existing units.

The application of uniform F.A.R.'s and density factors within each district permits the use of General Residence Districts in areas of relatively low density having two-family, rowhouse, and even some single-family developments. Because all structures, including apartment buildings, will be limited by the same Floor Area Ratio and would be required to have the same amount of lot area for each dwelling unit, the need to segregate dwellings by type (except in R1 and R2) is eliminated.

Opening up neighborhoods to a wide variety of dwelling types will result in many benefits to Chicago's citizens — property owners, tenants, and investors alike — including, among others:

1. Increased opportunity for economic assembly and development of vacant parcels.
2. More open space, light and air within residential blocks.
3. Relief from visual monotony created by mechanical repetition of one building type.
4. Provision within a single neighborhood of the cross-section of dwelling facilities required by persons of different age levels and marital, family, and economic status.

New methods and techniques for improved administration of zoning in Chicago are detailed in the proposed ordinance. The over-all administration of the ordinance is conceived in terms of four basic elements or functions; namely, (1) amendments and special uses; (2) appeals and variations; (3) technical studies and recommendations; and (4) routine administration.

Administrative Provisions

Amendments and special use permits will be under the jurisdiction of the city council—with the Plan Commission acting in advisory capacity on all amendments and special uses before action by the Council. Appeals and variations will, of course, be handled by the Board of Appeals. Technical studies and recommendations to the Council on zoning matters will be primarily the responsibility of the Plan Commission. Finally, the day-to-day administration of the ordinance—issuance of permits and certificates of occupancy, etc.—will be the function of a newly created Office of Zoning Administration headed by a Zoning Administrator.

Provision is made in the new ordinance for the elimination of certain classes of nonconforming uses and buildings, either gradually over prescribed amortization periods or through condemnation, purchase, and removal by the city—as authorized in the Illinois Statutes. Proposed amortization periods range from 2 to 40 years, depending on the assessed valuation of nonconforming buildings, their type of construction, or whether a nonconforming use is located in a conforming building or in a nonconforming building specially designed for such use. Additional proposals include restrictions on expansion, alteration, or change of nonconforming uses, and provision for compliance with the zoning ordinance in the event of abandonment.

Conclusion

By way of concluding, mention may be made of the simple form in which the proposed ordinance is presented. This simplicity has been achieved by incorporating the district regulations into a chart form, by reducing cross references to a minimum, and by employing a one-map system wherein both land use and building bulk designations are combined in a single set of zoning maps. The result is an ordinance which will be both easy to use and to administer.

* The F.A.R. expresses the permitted ratio between the gross floor area of a building and the area of the property on which the building is located. Thus an F.A.R. of 2 would indicate that a building could be built having a floor area that is twice the area of the lot on which it is situated.

New Film Shows How to Fight Slums

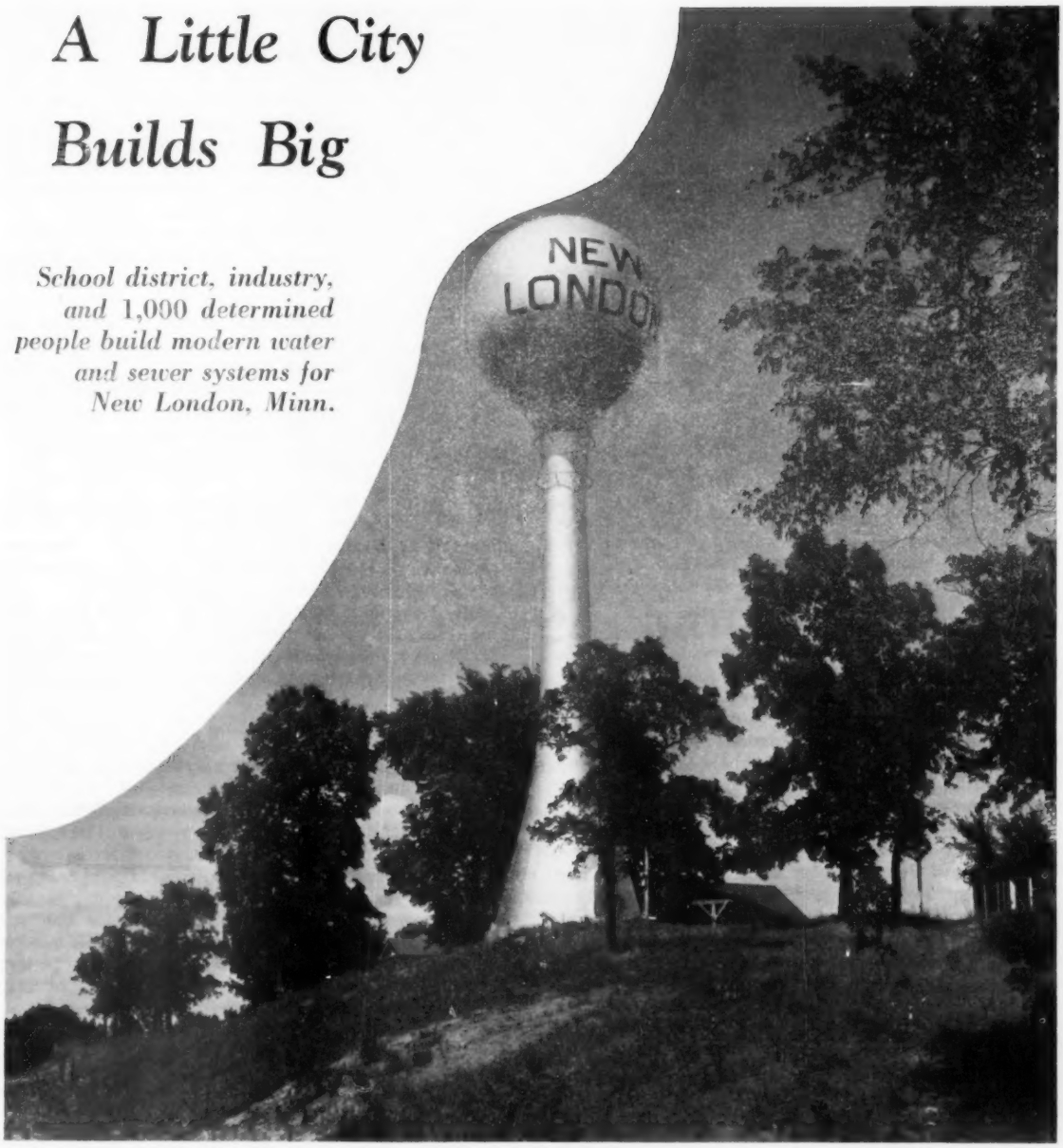
MAN OF ACTION—a new film produced by Transfilm for the American Council to Improve Our Neighborhoods and contributed as a public service by the Continental Can Company—faces the problem of slum prevention and elimination. The 13½-minute color cartoon in 16 mm is available on free loan to adult community groups, industry, and TV stations. It may be obtained from Association Films regional libraries.

This tool in ACTION'S program to stop deterioration of America's homes and neighborhoods features the Devil's project supervisor, Division of Urban Deterioration, and the Devil's accomplice, a symbol of citizen apathy. It demonstrates in an entertaining way how people themselves do the Devil's work and how they can thwart the villain by organizing to fight slums.

To learn more about this and other ACTION programs, write to ACTION, Box 500, Radio City Station, New York 20, N. Y.

A Little City Builds Big

School district, industry, and 1,000 determined people build modern water and sewer systems for New London, Minn.



This graceful water-storage tower helps make this little city's water system automatic.

NEW LONDON, Minn., lies along the banks of the Crow River in the heart of the Minnesota recreational area. The river meanders through a dozen or so lakes that have made this portion of the state famous. The city is a typical rural community with businesses and industry appropriate to its economy.

About 1,000 people live within its municipal boundaries. All believe overwhelmingly that a city of this size deserves the finest in water and sewage service, and have supported this stand by sturdy, long-range construction projects.

For a municipality of this size, a good water system and adequate sewerage are difficult goals. Nevertheless, the people had discussed the need for these services for many years. A few years ago, after a series of mass meetings, the little city held a general election and approved by a wide majority the necessary bonds that would make the construction financially possible. With such strong public support, the council retained the firm of Hitchcock and Estabrook, Minneapolis consulting engineers, to design and supervise the construction of the proposed systems.

Water System

To provide the water, the engineers arranged for a well 8 inches in diameter and 160 feet deep. A Fairbanks-Morse vertical turbine pump draws water from the well at the rate of 50 gallons per minute against a total dynamic head of 120 feet. This delivers water

to about 12,000 feet of cast-iron water mains. Healy-Ruff electronic controls make the pumping operation of the wells automatic.

The mains are all class 150 pipe, produced by the American Cast Iron Pipe Company, and utilize mechanical joints. The pipe was laid with rubber rings having lead ears so that they might be thawed electrically if needed during periods of abnormally intense cold.

The system also has 24 Waterous fire hydrants installed so that all property within the municipality has fire protection. The consulting engineers estimate that saving in fire insurance premiums alone will pay the entire cost of the water system over a period of years. To provide storage, the city erected a 50,000-gallon Chicago Bridge and Iron Watersphere. This is a spherical structure, gracefully mounted on a single tapered pedestal to form an attractive landmark. The storage tank provides an average pressure of about 40 pounds throughout the system.

Within the city also are two other wells, one operated by the school district and the other by the local creamery. Both wells have been examined and approved by the Minnesota State Board of Health. Consequently, both have been interconnected with the municipal system so that they can provide water in an emergency, thus providing standby capacity at low cost.

School District Cooperates

The sewage-treatment problem came to a head because of the construction of a new public school. The state requires provision for modern sanitary facilities in such new structures, as well as facilities for sewage disposal. The school board considered providing a septic tank and drain field, but when comparing this cost with that of a portion of a municipal disposal plant, members felt that sewage treatment was not properly a function of school administration.

After negotiation, the board agreed to contribute $20,000 toward the cost of a treatment plant, spreading the payments over a period of years. Since a substantial number of students live outside the municipal boundaries, this procedure means that the rural areas are helping to pay for improvements that normally would be supported by local residents alone. This fact and the solid public demand for the water system (by this time even those who had offered strong protest were in favor of the project) decided the council to build some of the sanitary sewers and construct a treatment plant.

The plant provides primary treatment but has been designed so that more thorough purification can be added at any time. Sewage flows entirely by gravity to the wet well at the plant, passing through a manually cleaned bar screen. Fairbanks-Morse nonclog sewage pumps then pick it up and deliver it to the settling tank. A Wallace & Tiernan chlorinator provides a sterilizing action to the final effluent.

The plant has two raw-sewage pumps, one with a capacity of 150 gpm and the other with 70 gpm. Piping was installed to permit adding a third pump at any time.

The settling tanks use Chain Belt scrapers to remove the sludge so that it can be transferred to an unheated Dorr Type M digester by a Carter piston-type sludge pump. The digester is equipped with a Varec flame trap and the gases of digestion are wasted to the atmosphere. Digested sludge is pumped to sludge-drying beds and from there is hauled away for use as fertilizer.

The digester has been designed to provide 8 cubic feet of volume per capita served. It is 25 feet in diameter and has a 17-foot sidewater depth. The drying beds provide 1½ square feet of area per person served, based on a connected population of 800.

The plant gets its water from a small 4-inch well equipped with a jet pump. This resulted in a net savings of several thousands of dollars because the nearest water main is more than 1,000 feet from the plant.

Financing

The total cost of the water system was $100,098. The cost of the sewer system was $89,018. To finance these projects, the municipality issued $185,000 in general obligation bonds, a portion of which will be retired by revenue from water and sewage charges. The council also has established a flat rate of $1.50 per month for residential water rates and $4 per month for commercial connections. Sewer-service charges have been fixed at $2 per month for residences and $6 per month for commercial establishments. Currently, 220 homes are connected to the system, or almost every home in New London. When the system was being planned, the council anticipated no more than 75 connections.

Record Swimming Pool Construction Forecast

IT is expected that 30,000 swimming pools will be built during 1956, as against 20,000 in 1955, according to a study recently made by the trade publication, *Swimming Pool Age*. The total cost of these new pools will be some $325 million, compared to $220 million for the previous year.

The tremendous growth of the industry becomes apparent when one considers that by the end of the Second World War only 8,000 pools had been built in the United States. The continued increase in tempo is anticipated on the basis of the strong demand by home owners, municipalities, hotels and motels, institutions, clubs, etc.

The boom can be explained chiefly by the lower prices resulting from reduced construction costs made possible by technological advances and from reduced cost of equipment and supplies. The average price of the 26,500 residential pools built between 1952 and 1956 has been about $3,000. In 1956 several pools are expected to sell for as little as $1,500 or $2,000 complete with filters, underwater lights and other equipment.

Residential pools account for about 35,000 of the 56,000 existing pools in this country. There are roughly 8,800 in "Y's," schools, hotels and motels; 7,400 municipally owned; 3,600 private club pools; and 1,200 commercial pools. Most have been built in the warmer regions, but the greatest percentage of increase in number henceforth is predicted for the frost areas.

A dragline scoops oolite from the ocean bottom to provide cover for Key West's sanitary fill.

Key West, Fla., adopts precedent-breaking practices to build one of the nation's most unusual sanitary fills

An Oolite—Covered Sanitary Fill

SOME 2,000 or 3,000 years hence, geologists, historians, and archeologists will be due for some surprises when they undertake exploratory diggings in the area of Key West, Fla. Undoubtedly, they will comment on the curious habits of the people living in the primitive era of 1956 who sealed their daily accumulations of trash in limestone cells. They probably will observe that although the Key West people had only awkward and inefficient means of travel, such as automobiles and aeroplanes, and virtually no understanding at all of basic fundamentals such as nuclear fission, they nevertheless had an acute and highly developed feeling of sanitation.

Key West uses a sanitary fill that is probably one of the most unusual in the nation. This city of 40,000, remotely located on the westerly tip of the Florida Keys and surrounded entirely by water, has to dredge up cover material from the Gulf of Mexico. The material is Miami oolite, often referred to as marl, and must be blasted loose from the ocean bottom. The city's ½-yard Osgood dragline brings it to the surface, loading it into trucks that move it to the fill area. The oolite is a soft rock, easily pulverized, that can be worked like clay but becomes hard and dense when compacted. Many Florida cities use it for pavement without the addition of cement or aggregate.

An International TD-14A tractor with a Drott Bullclam does the work on the fill itself. It spreads and compacts the refuse, then covers it with the oolite to a depth of about 1 foot. The cover material forms the best seal that any sanitary fill could have. It is dense and solid; no rat could possibly burrow through it nor could any insect pest breed in it. It traps and confines all troublesome odors.

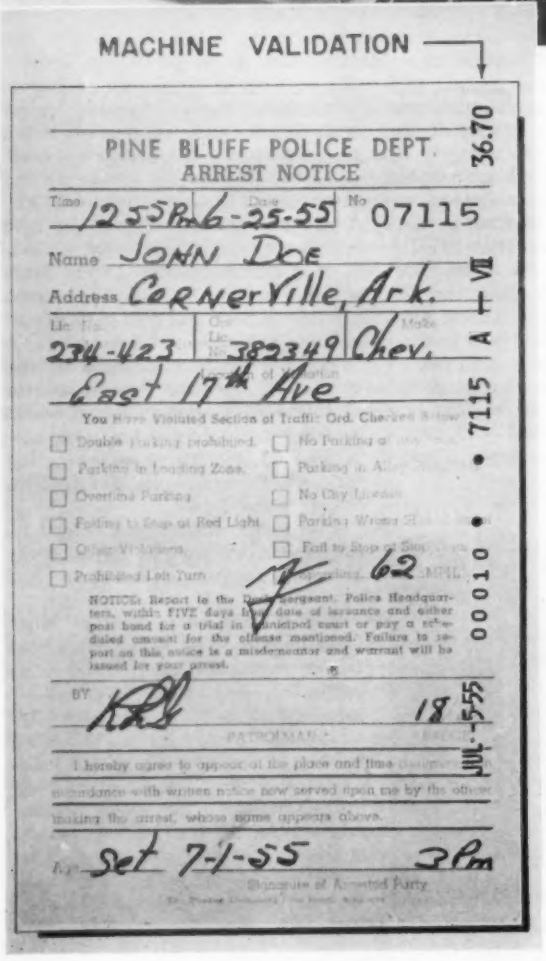
The fill has another unusual feature: it is operated by the Monroe County Anti-Mosquito District, which is using it to improve land that now is about 1½ feet above sea-level. The fill operation raises the elevation between 5 and 7 feet.

Eventually, the fill will extend into open water towards the highway and will adjoin a nine-hole golf course.

Key West uses seven Gar Wood Load Packers and two open-bodied trucks to collect about 1,400 cubic yards of refuse daily. The volume increases about 25% during the tourist season. Funds for the operation come from an appropriation by the city of Key West and a matching appropriation from the Bureau of Entomology of the Florida State Board of Health. The work is directed by William W. Warner, director of the Monroe County Anti-Mosquito District.

A Bullclam covers compacted refuse with oolite to make a perfect seal for the fill.

The desk sergeant records a transaction on the department machine. Only validated records are accepted by the auditor.



MACHINE VALIDATION

PINE BLUFF POLICE DEPT.
ARREST NOTICE

36.70

Time 1255PM 6-25-55 No 07115

Name JOHN DOE

Address CORNERVILLE, ARK.

Lic. No. 234-423 Chev. Lic. No. 382349 Make Chev.

East 17th Ave

You Have Violated Section of Traffic Ord. Checked Below:

☐ Double Parking prohibited ☐ No Parking of

☐ Parking in Loading Zone ☐ Parking in Al

☐ Overtime Parking ☐ No City Licens

☐ Parking to Stop at Red Light ☐ Parking Within

☐ Other Violations ☐ Fail to Stop at Sto

☐ Prohibited Left Turn ☐ Speeding

NOTICE: Report to the Desk Sergeant, Police Headquarters, within FIVE days from date of issuance and either post bond for a trial in Municipal court or pay a scheduled amount for the offense mentioned. Failure to report on this notice is a misdemeanor and warrant will be issued for your arrest.

BY KPS 18

I hereby agree to appear at the place and time designated in accordance with written notice now served upon me by the officer making the arrest, whose name appears above.

Set 7-1-55 3PM

Signature of Arrested Party

A 7115 • 00010 • 62 JUL-555

Mechanized System Doubles Traffic Fines Collected

By NORMAN D. YOUNG

Chief of Police, Pine Bluff, Ark.

ONE of the first projects laid out when I was appointed Chief of Police for the City of Pine Bluff, Ark., was to develop a better accounting system for the Traffic Department. That was in April 1954.

In the old set-up, a full book of tickets would be issued to each officer. No record was made of when the books were issued, the number of books issued, or the officers who received them.

The officer would give the original ticket to the violator and the duplicate was turned in to the desk sergeant. If the violator did not pay the fine, no follow-up action was taken, and the tickets were destroyed.

Normal procedure for settling a traffic ticket called

for the violator to come to the police station with the original ticket and pay the fine. The ticket was then marked "Paid" and put on a pin file. If the violator requested a receipt, the desk sergeant made out a hand-written receipt.

The number of the traffic ticket and the name of the violator were listed on a docket by the desk sergeant, and at the end of the month the total for the month was entered in the police docket. Money was remitted to the City Collector's office about twice a month.

The primary weakness of this system was that no record was made of the number of tickets that had been issued; the only record was of fines paid. Any member of the force could void a ticket for any reason, without signing his name or stating the reason. And there was no way of knowing who voided a particular ticket.

Another serious weakness was that we had no way of knowing how much revenue the department should get, since the number of tickets issued was not known. In addition, several persons handled the money that was paid in. If a mistake was made, we had no way of knowing how it happened or who did it.

Now We Know

When we decided to strengthen the system, we called in representatives of the National Cash Register Company to make a survey and make recommendations. Then, equipment was authorized by the City Council and installed in July 1954.

We now have complete records of all tickets issued, all tickets paid, all tickets voided, classification of revenue, and number of violations. This information is accumulated automatically. A daily report for the chairman of the Traffic Committee, the mayor, and the chief of police is prepared simply by reading the 21 totals of the machine shown here.

How It Works

All blank books of tickets are charged to the Traffic Sergeant. He keeps them under lock and key. Each officer signs for the tickets issued to him. The officer gives the original to the violator and the duplicate is turned in to the traffic sergeant. If the ticket is issued during the night shift, the duplicate ticket is placed in a locked box in the traffic department.

All duplicate tickets are filed by date in the traffic office. At the end of five days, if the violator has not paid the fine, the ticket is set up five days forward, and a card is sent to the violator. The violator is warned that he has five more days in which to pay the fine. If the fine has not been paid after the two five-day periods, a warrant is issued for the violator's arrest, and he is brought in for court action.

When the ticket is paid within the first 10 days, the payment is recorded on the machine. The desk sergeant enters on the keyboard of the machine the amount of the fine, the ticket number, the kind of violation, and his own initial; the date prints automatically. The original ticket is lined up on the printing table of the machine, the motor bar is touched, and the machine certifies this information on the ticket. At the same time, a record is made on the detailed audit for permanent record, and a receipt is issued for the violator.

If the violator does not have his original ticket, the duplicate is certified. Certification is necessary, as it is the only record that will be accepted by the public accountant who audits department records.

If a ticket is voided, the ticket number, amount of the fine, and the initial of the person handling the transaction is certified on the ticket, using the "Void" key. The machine thus accumulates a total of all voided tickets. We know at all times the number of tickets that have been voided and the amount of money involved.

Norman D. Young, chief of police at Pine Bluff, Ark.

Doubled Revenue

In the 10 months since the installation of this system, we have collected $6,124 in overtime parking violations. Other traffic fines total $14,284.50, giving us a grand total of $20,408.50 that has been collected since the system was installed. Under the old system, for about the same period of time in the previous year, $10,875.50 was collected. This represents a difference of $9,533, and means that the department has doubled the incoming revenue on about the same number of violations. The system "paid for itself" in the first four months of operation. It also helped the morale of the officers by eliminating the complaints and criticisms we had received from the citizens of the city.

New York Picks Its Parking Spots

NEW YORK CITY'S long-range parking program calls for 20 municipal garages and more than 50 parking lots. The garages are of ramp design for short-time parkers. The lots—for park and ride—will be near subway terminals and along railroads for commuter use. The first two lots were opened in Queens in the summer of 1954. The next 13 lots will consist of three each in the Bronx, Queens, and Staten Island, and four in Brooklyn. The three garages currently planned are awaiting Board of Estimate approval. One will be at 8th Avenue at 53rd Street in Manhattan (the first) and two will be in Brooklyn. The entire program is expected to be completed in eight years.

40% More Rainfall

Cloud seeding begins to roll up a documented record of success in drought-troubled areas

By DR. IRVING P. KRICK
President
Water Resources Development Corp.
Denver, Colo.

THE task of transporting water to the place it is needed has challenged engineers for centuries and has inspired the world to build great aqueducts that have dominated history. Today the scientist is giving the engineer another water transportation tool, one rich in imagination and yet low in cost. This stimulating method is currently proving itself in drought-troubled areas in the presence of some of the nation's most realistic and practical waterworks engineers and technicians.

Mother Nature provides this transportation system without charge. Her global wind currents carry clouds laden with water drawn from the oceans, lakes, and heavily vegetated land areas, to the areas needing it. However, she invokes a strict rationing program, permitting only about 5% of the water passing overhead to reach the ground.

When 2% Means 40%

Nevertheless, man can induce her to part with an additional 2% by using a scientific cloud-seeding program. She can replenish this lost water easily from her vast overhead supply line and reservoir. But the additional 2% means approximately 40% more rainfall for water-short areas.

This overhead supply line appears to operate in the temperate latitudes along zones of interaction between the cold polar airstreams and warm tropical or subtropical ones. Atmospheric disturbances contort these zones to form wavelike shapes marked by falling atmospheric pressure at their crest. Weather observers often refer to them as low-pressure areas. The warm airstream passes aloft, over the cold polar air, to form cloud masses. Within these clouds, a large portion of the rain originates as snow at levels where temperatures are below freezing. The snow is produced by the growth of ice crystals forming on dust or other foreign particles present in the clouds.

This is the key to cloud seeding and the resultant increased rainfall. In nature, the reaction takes place only when cloud temperatures are far below freezing, usually around —10° F. To induce rainfall artificially requires the use of a freezing nucleus that will operate at warmer temperatures — somewhere around 32° F. When man artificially introduces them into supercooled cloud formations he starts a reaction that draws additional rainfall from the warmer, more moist regions of the clouds usually untapped by nature.

Modern Techniques

Modern cloud seeding began with basic researches conducted at the General Electric laboratory at Schenectady, N. Y. Here, in November 1946, Vincent Schaefer dispersed dry ice pellets through supercooled clouds and observed snow falling from the operation. He had previously discovered in the laboratory that dry ice would cause a supercooled cloud of water droplets in a cold box to flash over to ice crystals and concluded that the same mate-

rial, dispersed through similar clouds in the atmosphere, would produce identical effects.

Carbondioxide, in the solid, "dry ice" form has proved effective, but is troublesome to use. It is expensive, must be carried to the clouds by aeroplane, and cannot be applied continuously during the life of a storm.

Silver Iodide

However, silver iodide, a yellow powder, is not subject to these limitations. It has a crystalline structure very much like dry ice; it can be vaporized to float the crystals into the cloud formation. Thus it can be fed continuously from the ground.

Other products can be used to produce the nuclei needed. Various types of earth in the form of dust, certain fine forms of ash, and salt lifted from the ocean will serve.

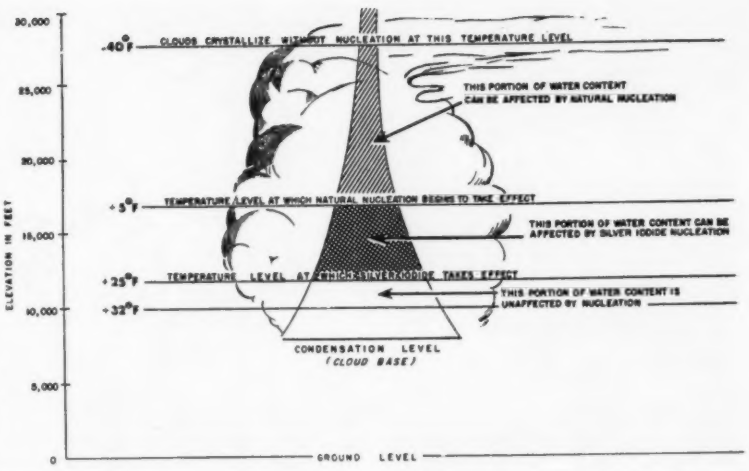
Silver iodide will provide rain-forming nuclei in that portion of the clouds not affected by natural nuclei at temperatures of 25° to 5° F. At colder temperatures, the natural dusts of the air will provide the nuclei. And at —40° F., the clouds need no nuclei to crystallize. Thus the silver iodide permits man to tap a substantial portion of the clouds that hitherto was unaffected. From this comes the additional 40% of rainfall.

To extract this additional rain from the clouds, one must maintain continuously an optimum number of nuclei in the clouds during the period when active rainfall belts appear in the area. By atmospheric studies one can select the most likely sites for the generators of silver iodide particles for any set of storm conditions.

Case Histories

Case histories are the most convincing test of a method's effectiveness. Dallas is an excellent example. In November 1952, the city's water supply had sunk to a dangerously low level because of persistent drought. The city contracted with Water Resources Development Corp. in the hope of alleviating this serious water shortage. The contract period extended from November 22, 1952 to May 22, 1953. During this period, 15 ground generators for vaporizing silver iodide were located strategically throughout the area to influence possible storm situations.

The success of this operation was clearly demonstrated through the net increase in storage of 80,600 acre-feet of water between January 1 and June 1, 1953. This is almost equal to the combined gain of 93,000 acre-feet during the spring months of the previous two years. Adjacent water sheds recorded less favorable run-off figures.



This diagram shows the portion of a cloud affected by artificial nucleation.

Although operations were performed primarily to increase municipal water supply, correlated benefits to agriculture were remarkably great. An independent crop-reporting organization, the Erickson Crop Reporting Service, stated that the entire Lake Dallas watershed showed a moisture penetration of 25 to 35 inches, compared with 10 to 20 inches in nearby areas to the west. By April 29, 1953, crop observers around the city of Dallas considered winter wheat, alfalfa, oats, and rye to be "the most promising crops in years."

During the second year of operation, 19 generators were strategically located to insure complete coverage of the target area. The principal moisture-bearing airstream, affecting the area as well as the surrounding regions, comes from the Gulf of Mexico and approaches the target from the southwest. When the unseeded sections of Texas along the line of moisture are compared with the target area, it is found that the watershed of the city of Dallas profited by approximately 30 inches of rainfall or about 50% increase of normal precipitation for the total operational period.

Another Water Crisis

Another municipality that contracted the weather modification services of the author's organization is Greensboro, N. C. This city was also confronted with a serious water shortage in October 1954. The following excerpt taken from the front page of the *Greensboro Daily News*, dated December 13, 1954, shows how serious the situation was:

The water level at Lake Brandt was 4.8 feet below the spillway. Even with rationing and the help of emergency civil defense pipelines pouring two million gallons of water daily from High Point Lake, the city was confronted with the possibility of no water at all for human consumption in 30 days.

In the face of this crisis, the city council contracted with the Water Resources Development Corp. for a two months' weather modification program, beginning October 11, 1954.

Cloud seeding was discontinued from October 15 until October 21 due to Hurricane Hazel. Therefore,

in the final evaluation of the operations, the rainfall that occurred during this period, was excluded from calculations, since no operations took place during this time. On the evidence of data available for assessing the value of cloud seeding operations to the watershed of the City of Greensboro, it appears that the target area profited to the extent of 40% to 50% over unseeded areas to the south and west.

Similar Pattern

A similar pattern occurred September 9, 1954 during a storm which was seeded by the author's organization for the El Dorado, Kans., watershed. This is an excellent example of operational accuracy of targeting. The city's watershed received approximately 2 inches of rainfall, compared to considerably lower amounts in surrounding areas, which did not come under the influence of cloud seeding for rain-making.

On the basis of results achieved through cloud-seeding operations in the United States and other parts of the world, there is every reason to believe that effective cloud-seeding programs could materially affect water shortages wherever they occur. Such operations, maintained throughout the year, would help to improve both underground and surface water storage at a faster rate than could be expected from natural precipitation. Additional water added to the reservoirs would be in proportion to the frequency and intensity of natural storms, being greatest during wet years and least during dry years. A sustained program over a period of years would minimize the need for construction of new storage capacity to meet the ever-increasing demands for water supply.

Houses Quickly Appraised

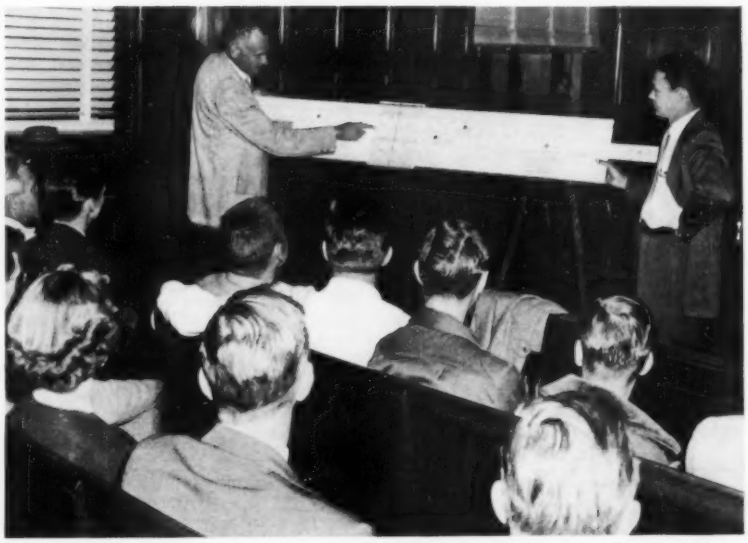
A SIMPLE slide rule for figuring residential valuation has been devised by the South's largest appraisal firm, Hunnicutt & Associates, of St. Petersburg, Fla., and Atlanta, Ga. A 134-page manual titled "Simplified Residential Cost Estimating," describes its use in evaluation work. After testing the slide rule and manual in the appraisal of 250,000 parcels of real estate in Fulton County, Ga., both have been placed on the market.

Warren P. Hunnicutt, head of the firm that produced the new device, declares that its use will enable men and women with only brief instruction in its operation to handle practically all of the residential appraising except luxury homes ($75,000 or more) in any community project.

The slide rule, he says, has the twin advantage of speeding up estimating procedures as well as cutting estimating costs.

It is manufactured by the Keuffel & Esser Co. and is 14 inches long by 2¼ inches wide. The rule, which can be purchased with the manual from the Hunnicutt firm, is a simple device and does not require special mathematical skills to manipulate it.

The development of the slide rule grew out of a belief that the basic unit costs of construction vary according to four factors: quality of materials and workmanship; wall type; shape; and area. As far as quality of materials and workmanship are concerned, the Hunnicutt firm believes that houses can be classified very much like automobiles, which are rated according to horsepower, quality, and price range.



Using a large scale model, Fred C. Courtright, head of Hunnicutt & Associates engineering department, explains the workings of the residential cost estimating slide rule to members of the staff of the Orange County, Fla., tax assessor's office. Jack C. Hamilton, designer of the rule, is at the right.

Thus the slide rule makes use of a newly devised and patented system of nine residential building classifications that range from houses with 200 to 800 square feet, costing $1,000 to $3,000 to build, on up to houses containing 1,000 to 2,400 square feet, costing $25,000 to $50,000 to erect.

Instructions are supplied in the manual for using the slide rule to determine the building cost index for any community. Heretofore, building cost indices were available only to large metropolitan areas and were furnished by specialists in this field on a service subscription basis. With the use of the slide rule, any tax assessor or appraiser can determine with ease the building cost index for his community regardless of size.

The idea for the new slide rule originated with Jack C. Hamilton of the Hunnicutt firm.

A Dempster-Dumpster GRD picks up the large refuse container . . .

We Are Trying a King-Sized Truck

By S. W. GRAYDON
Sanitary Engineer
Atlanta, Ga.

ATLANTA, years ago, recognized the great value of the large refuse containers transported individually by trucks with special hoists. They presented a practical, sanitary solution to refuse collection in crowded areas, markets, hotels, apartments and similar locations. They are large enough to receive the refuse and keep it out of sight, sturdy enough to withstand a good deal of abuse, thoroughly watertight, and able to be closed tightly. We currently use about 125 of these Dempster-Dumpster Containers scattered at key points throughout the city.

However, we have realized for several years, that despite their advantages, they call for a certain amount of lost motion and wasted manpower in our particular location. The containers hold from 6 to 10 cubic yards of refuse. When we had to haul this for more than 2 miles, hauling costs began to mount. Many of the containers have to be trucked 6 miles to the point of disposal.

Not long ago, we learned that the Pak-Mor Manufacturing Company was making plans to build a 32-yard trailer for the purpose of minimizing long hauls. We felt reasonably certain that this big trailer could be combined with the Dempster units in some way or another. Consequently, we contacted representatives of both companies and discussed the proposed combination unit. All concluded that it was worth a try.

Currently, we have a pinpoint map, showing the location of each of these containers, and from this we developed a route permitting the Pak-Mor trailer to reach the heaviest concentration of containers. A specially designed Dempster hoist, commonly referred to as a GRD, shuttles from this axis of travel to the containers assigned to the routing. On one of our first test runs, the big trailer held 87 cubic yards of compacted refuse. It probably will hold an average of 70 yards.

In terms of economy, the combination provides a positive savings of manpower. Prior to its installation, we employed five truck drivers and five laborers to remove all the Dempster-Dumpster Containers. At present, we do the same work with three truck drivers and two laborers. On this basis, the combination unit will pay for itself in salaries saved in less than two years.

The present pickup route extends from a point about 1 mile from the Atlanta incinerator to points from 3 to 6 miles away. We now pick up an average of 47 containers per night with the expectation that shortly we will be able to pick up 60 containers per night. Eventually, we hope to include all Dempster-Dumpster units.

. . . and shuttles it to the 32-yard refuse truck trailer.

1955's All America Cities

Awards honor citizen action in improving eleven municipalities

- **BELLEVUE** *Washington*
- **BLOOMINGTON** *Illinois*
- **CAMBRIDGE** *Ohio*
- **GRAND ISLAND** *Nebraska*
- **JOLIET** *Illinois*
- **PHENIX CITY** *Alabama*
- **PORT HURON** *Michigan*
- **READING** *Pennsylvania*
- **RIVERSIDE** *California*
- **ST. PAUL** *Minnesota*
- **SAVANNAH** *Georgia*

WITH the announcement of the 1955 All America Cities Awards, 11 municipal success stories are again being told. The stories carry the common thread of citizen action against local civic indifference, inaction, and — in some cases — plain corruption. They are success stories because in each community where these expensive municipal diseases had been flourishing the evidence of cure is available for all to see in the form of long sought-for public facilities, reform governments, and departed racketeers.

Awarded by the National Municipal League and *Look* Magazine, the All America Cities' honors for 1955 have gone to Bellevue, Wash.; Bloomington, Ill.; Cambridge, Ohio; Grand Island, Nebr.; Joliet, Ill.; Phenix City, Ala.; Port Huron, Mich.; Reading, Pa.; Riverside, Calif.; St. Paul, Minn.; and Savannah, Ga.

In one sense, the problems faced in the 11 stories are a microcosm of the problems facing municipalities throughout the country. Four of the communities were—and still are—faced with staggering needs resulting from rapid rates of population growth. But now with the help of intelligent citizens' action committees, the local governments of these communities are meeting the demands for such improvements as new schools, expanded water systems, and means of preserving something of the old local charm in the face of an overwhelming flood of new development. Another four of the 11 municipalities were faced with problems of stagnation resulting in some cases from sagging local economies. Aroused to preserve their economies and to get sought-after improvements, citizen groups in these four cities have either spurred local officials to action or have answered some of the needs through their own organizations. Finally, in three communities outright municipal corruption and irresponsibility were rampant, and here again an aroused citizenry did the trick by establishing reform governments.

Coping with Booming Growth

Bellevue, Wash. When Seattle's famous "floating bridge" was completed across Lake Washington just before World War II, Bellevue suddenly began to grow. The effect wouldn't have been much different if the town had been a sleepy Hawaiian hamlet and had suddenly been displaced to Seattle's doorstep. For with the improved route to Seattle, Bellevue, since 1940, blossomed from a community of less than 1,000 to a booming suburb of almost 9,000 persons.

Threatened with the results of a run-away growth, that would have swept away the last shreds of Bellevue's local character, citizen groups began to (a) determine future school needs, (b) prepare the way for a new water supply system and sewage disposal plant, and (c) establish a council-manager form of government. So successful has been Bellevue's progress in providing for these that citizens in adjacent areas are beginning to petition for annexation to Bellevue.

Riverside, Calif. Starting with 35,000 citizens in 1940, Riverside has gained over 30,000 new residents and thus has just about doubled its population in the past 15 years. Threats of overcrowded schools, water shortages and blighted areas stirred the local citizens to action. Study committees were formed and several hundred citizens joined in the initial process of fact gathering and developing recommended programs of action. The programs were broad, and since the adoption of a council-manager government in 1953, Riverside has accomplished much with the help of thousands of citizen workers. The progress has included the development of a long-range plan of community growth, doubling the size of the community hospital, expanding the primary and secondary school systems, cleaning up areas of substandard housing, and assuring a future ample supply of potable water.

Grand Island, Nebr. The heart of Grand Island's problems was its school system, which was bursting at its seams as a result of a growth that swelled the city's population from 19,000 in 1940 to 29,000 in 1955. With a report on hand from the Uni-

versity of Nebraska suggesting the abandonment of three outmoded school buildings and a multimillion dollar construction program, over 2,100 citizens, PTA, and civic organization members plus 500 high school students began to campaign for the passage of the necessary bond issue. Work done by the various committees represented 7,000 man-hours of effort. The result: passage in 1952 of a $4 million bond issue, construction of three new elementary schools, completion of a $2.7 million senior high school, and conversion of the old senior high school to a junior high.

Joliet, Ill. As Joliet grew rapidly during the late 1940's and early 1950's, its citizens thought a lot about its children. Providing good schools and solving the threats of juvenile delinquency were uppermost. But two attempts to pass bond referanda for school expansion failed, and there seemed to be a lack of leadership in the city government. Finally, although good progress had been made on a youth program, more effort was needed. Between September 1952 and October 1954 citizen groups totaling over 3,500 persons have accomplished the following: helped pass a $4.8 million school bond issue; voted in a council-manager government; and brought to "full bloom" Joliet's community youth program serving 9,639 children. Juvenile delinquency rates in Joliet are now the lowest in the country.

Action Against Economic and Political Stagnation

St. Paul, Minn. Despite its size (334,703 persons in 1955), no substantial investment had been made in St. Paul's physical plant for almost 25 years. That statement was true in 1951 when the United Improvement Council (consisting of two representatives of all important civic organizations) was formed. After two years of studying and campaigning for the kinds of developments needed to serve St. Paul, a $39 million bond issue for permanent improvements was put up for vote by the city government. When over 74% of the voters favored the big and overdue spending, everyone knew that the United Improvement Council had done its job well.

Port Huron, Mich. Port Huron's 37,000 citizens realize that their city is not immune to economic problems. (During the recession of 1949, it was declared a distressed area with a substantial labor surplus.) This realization has influenced the city's thinking for some time. Therefore, in planning improvements for the post-World War II period, civic leaders formed the Port Huron District Foundation to receive and distribute funds for public improvements. Membership in the foundation consists of local businesses and industries as well as civic organizations. Since its inception it has completed a memorial recreation park and stadium, helped enlarge the area's old hospital and built a new one, gave the city $20,000 towards a small boat harbor, and gave substantial contributions to the Boy Scouts, Girl Scouts, and a local youth camp.

Cambridge, Ohio. Acting to improve the city's sagging economy, Cambridge's unofficial Community Industrial Association has induced a number of new companies to settle in this city of 15,500 by building new industrial structures or remodeling old ones. The group also spurred the purchase of the Cambridge Glass Co. by local business men and former workers when it closed in 1954. Now reopened under its new local management, the rejuvenated company is doing well. The Community Industrial Association is financed by the sale of $25 certificates to local citizens.

Bloomington, Ill. Mired in a depression of inaction, Bloomington's city government was surveyed in 1943 by the local Committee for Economic Development. The report reviewed the poor condition of the local schools and fire protection services, overcrowded hospitals, decayed street pavements, and concluded that the city was in a serious state. Spurred by the report, the 100 member Better Bloomington Committee and the 200 member All Bloomington Committee aroused citizen action that has resulted in the modernization of the school system, establishment of council-manager government, installation of a housing authority, promotion of new industry, repair of streets, improvement of local hospitals and other progress.

Action Against Corruption

Savannah, Ga. Evidence of fiscal inefficiency, testimonies of voting irregularities, tax inequities, and discontent with city services characterized the view that a growing number of Savannah citizens had of their local government in the 1940's.

An editorial suggestion for the cure of the city's ills appeared in the Savannah *Morning News* in 1946. The suggestion: switch to council-manager government and call in professionally trained administrators to bail Savannah out of its governmental mess. Seized upon by citizen groups such as the Junior Chamber of Commerce, League of Women Voters, Civitan Club and others, the idea was promoted vigorously until a city-wide vote approved the plan in 1951. A new city charter was prepared and the new council took office in 1955. Reform is under way in this Southern city of 135,000.

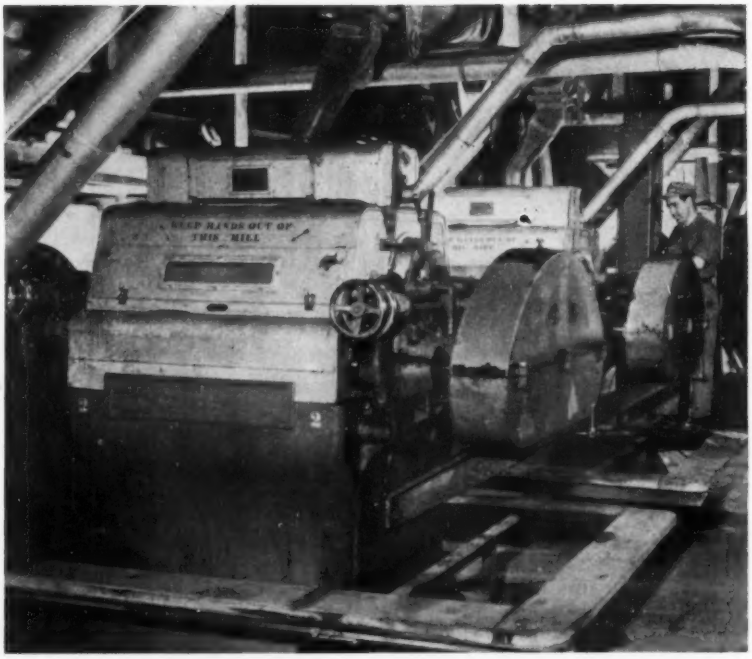
Phenix City, Ala. Political and criminal gangsterism ruled this city of 25,000, which boomed during the 1940's because of the growth of nearby military installations. Gambling and vice were rampant and protected by the local political machine. Determination to rid Phenix City of its civic disease, led to the formation of the Russell County Betterment Association to wage all out war against the corrupt officials. Spearheading the fight, this group with the local Jaycees convinced enough fellow voters to elect reform officials in a 1954 election. With the assassination of the newly elected state attorney general who was dedicated to the clean-up of Phenix City, state and federal officials moved into action. With corruption exposed and on the run, the citizen groups have helped install new local officials.

Reading, Pa. Twenty years of governmental domination by gambling interests were capped by a 1951 expose by Senator Estes Kefauver's Senate crime investigating committee. With the facts out in the open, Reading's Citizens' Committee for Good Government went into action and enlisted four key candidates to run in the fall elections for the positions of mayor, district attorney, and two council seats. Campaigning with church cooperation but without help from the newspapers and most other civic groups, the Citizens' Committee convinced enough voters to put the reform slate in office. Since then good government has been restored and community spirit is high.

New Separator Improves Milorganite Production

Milwaukee Sewerage Commission takes an industrial screening separator and assigns it new duties

By JOSEPH A. MAIERS
Division Engineer, Plant Design
Milwaukee Sewerage Commission
Milwaukee, Wis.



The Allis-Chalmers double-roller mills grind oversize sludge particles.

THE transformation of sludge collected in a sewage-treatment plant into a useful fertilizer is a manufacturing process. Since it produces a material that has to be sold in a competitive market, the Milwaukee Sewerage Commission is obliged to keep abreast of the latest methods in order to make the manufacture of its material more efficient.

Screening of dried sludge is an important step in its manufacture as a fertilizer. And a rotating, vibrating screen, commonly used in food and grain processing industry is now helping to make this step more effective.

Drying Sludge

As many already know, the product we manufacture is sold under the copyrighted name of Milorganite. It is produced to meet very exacting standards. None of it is retained on the No. 9 mesh screen; less than 2% is retained on the No. 10 mesh; approximately 70% is retained on the No. 28 mesh; and 1% or less passes the No. 65 mesh. The moisture content of the dried material does not exceed 6%.

Milwaukee System Distinctive

The step of changing the sludge to fertilizer has made the Milwaukee plant well known in the municipal field. People write us on an average of once a week for details to determine whether or not their city can begin a similar manufacture in their plants. However, ours is unusual in the sanitation field in that it produces an undigested activated sludge, richer in nitrogen than digested sludge collected in other municipal plants. This makes the production of good fertilizer more favorable.

Moreover, our production line is continuous. Many small cities would have to produce the fertilizer on an intermittent basis which would necessarily make the capitalized costs higher.

In our plant, the raw sludge is conditioned with ferric chloride, dewatered by Oliver continuous-vacuum filters, and enters the Atlas type rotary dryers with a moisture content that varies from 81% to 85%.

Approximately 15% of the cake is reduced to a size suitable for marketing as it passes through the dryers. The balance has to be reduced to proper size by passing it through crushers.

We divert part of the dryer-discharge material to the dry-feed stream and convey the balance to the important "primary" screening plant where it is separated into three classifications: coarse, intermediate, and fine. Since the "fine" classification meets the required Milorganite aggregate standard, this material is sent to the warehouse for storage.

The intermediate classification is oversized material having a moisture content within the acceptable range for Milorganite. This is crushed with roller mills, and then conveyed to the secondary screening plant where it is classified into oversize, Milorganite-size, and dust. The oversize material goes back to the dry-feed stream; the Milorganite-size is conveyed to the warehouse; and the dust is mixed with the material salvaged from the Cyclone waste-screening plant and sold separately.

The coarse classification, in addition to being oversize, has a moisture content in excess of that permissible under our standards. We crush this in cage mills and discharge it into the dry-feed stream.

Obviously, the primary screening plant carries a great deal of responsibility in our operation. We always have been on the alert for more reliable ways to perform this primary screening step.

Our study of the rotating, vibrating screen exemplifies this type of study. For the past eight months, we have placed in continuous operation a SWECO Model C-2D separator, made by the Southwestern Engineering Company, of Los Angeles, Calif.

The separator is primarily a rigid body vibrating about its center of mass. Vibration is accomplished by a combination of two eccentric weights, one on the upper end of the motor shaft, and the other at the lower end. By its special design it can produce vibration in both a horizontal and a tilted plane under controlled conditions that encourage efficient screening. The machine itself has to be very sturdy. The average temperature of the sludge fed to the screens is approximately 130° F. It is very abrasive and the accompanying vapors are corrosive.

This separator is simplifying key operation in the production of fertilizer in the Milwaukee sewage-treatment plant.

From our use of the machine, we have concluded that the separator offers a large capacity for each square foot of screen area and for the space occupied. Both are important considerations in any manufacturing operation.

We have found wire blinding of the screens unusually low; less than 1% of the screen area will be clogged after 200 hours of continuous operation. The screen cloth, a stainless steel, has given us long life.

We have found no external leakage in the machine, even though it is processing a fine material that appears to flow like water. We have had no leakage between classifications—important when one is producing a fertilizer of guaranteed excellence.

We have been confronted with no maintenance costs during the entire eight months and present indications are that over-all maintenance will be low throughout the entire machine.

9 Plows for 161 Miles of Street

By DAVID P. ROWLANDS, *City Manager, Eau Claire, Wis.*

DURING each normal winter, Eau Claire can expect somewhat more than 40 inches of snow, generally arriving in about four heavy storms and requiring the plows to go to work. The city has 161 miles of streets that are opened by plows, and we assign nine plowing units to this job.

Of these, six are one-way tipping, truck-mounted plows; half are Frinks and half, Wausaus. We also use three graders, one carrying a V-plow to fight its way through the heavier drifts.

About 5 miles of streets in the downtown area are completely cleared. To do this, we plow the snow into windrows, pick it up with our Barber-Greene loader, and haul it away with our fleet of nine trucks. At the airport, a Snow King rotary snowplow clears the runways.

Ice control proceeds continuously during the winter season. Customarily, we use calcium chloride and sand spread by Frink revolving blade spreaders. Our practice is to place 50 pounds of chloride in each cubic yard of sand; we mix the chloride with 1% Banox to inhibit rusting of automobile bodies. Occasionally, we use straight rock salt but when the weather becomes very cold we find that the faster acting calcium chloride meets our needs to better advantage. When we use the salt alone, we apply it at the rate of 400 pounds per mile for a width of 8 feet. We also mix Banox with the salt to inhibit corrosion.

A Barber-Greene loader keeps Eau Claire's downtown clear of snow from curb to curb.

Municipal Public Relations

The City Tells Its Story

Edited by PAN DODD WHEELER
Executive Director, Government Public Relations Association

On "Past Performance," Tales from Seven Cities Show:

Municipal Public Relations Paces Progress on Projects: "Annexation" to "Urban Renewal"

H. A. Richardson

INCLUDING people in planning for municipal projects—and keeping them informed individually and through citizen groups—is a basic factor in expediting major city government projects. This is the moral of case histories from seven major cities, reported here—as they were reported in Miami to the American Municipal Congress—by the PR officials involved with the projects.

"The successes spotlighted here," says Dr. Hayes A. Richardson, director of welfare and PR chairman in Kansas City, and the president of the Government Public Relations Association, "have been based on recognition that the strength of a city government depends upon the integration of its citizens with the various agencies which serve them. Whether the project is annexation or a public works problem, the reports indicate that citizen participation and sound information programs can spell the difference between defeat and success."

L. P. Cookingham
City Manager

PR for KC's Annexation

BY A 3-to-1 vote, the people of Kansas City have added 48 square miles to our city. In 1952, the people turned down a similar proposal. In the recent referendum, public relations planning played a major role in the success. First we employed a research group to make a study to find out why annexation had failed in 1952. The significant fact the study revealed was that the "no opinion" group—people uninformed, hence indifferent — was the largest. This made our course clear. Citizens would have to have complete information about the need for annexation, advantages for themselves, and knowledge of the adverse results if annexation failed.

One of the responsibilities of government is to provide its citizens with comprehensive information. Public funds must be used for these purposes so our council appropriated $40,000 to discharge this obligation. A public relations firm was employed to handle the information program which included all media. City hall prepared and mailed a brochure about city services to the 9,000 residents in the area to be annexed. Citizen groups raised their own funds to do a selling job on annexation. Annexation won.

Miami Beach Public Works

LAST June, after an intensive public information campaign, the population of Miami Beach turned out in record numbers to approve all but two of 13 public works proposals involving an expenditure of $5,000,000. Many of you may have read about the information effort in the October 1955, MPR pages of THE AMERICAN CITY. Briefly, we used an information kit of facts for editors, columnists, and newsmen of all media and for speakers and telephone committee members. We also prepared a brief, fact-filled brochure to tell the story of the proposed improvements to residents. Citizen groups cooperated enthusiastically in the information job.

Hank Meyer
MPR Director

The important element of this particular success, I believe, is the fact that Miami Beach has a fulltime, professionally-staffed Municipal Public Relations Department. Because it is constantly in touch with the people, with citizens groups, and with all media, these channels can be utilized for special information-education efforts with minimum time and effort and with maximum effect. We find that Miami Beach people cooperate because they are consistently asked to use the "muscles of citizenship" to improve Miami Beach inside ... and to promote it outside.

PR in Chicago Renewal

Alice Gorman
PR Officer

FLOURISHING neighborhood urban renewal organizations, coverage from major Chicago newspapers, news and spot announcements over local radio stations, and a television series—just started in January — are evidences of the public relations activity that has

paced Chicago's urban renewal efforts. Urban renewal is the task of the Office of the Housing and Redevelopment Coordinator, of which I am a part, in cooperation with a number of other public commissions. The coordinator's office is a liaison between citizen groups and the mayor and city government in housing, slum clearance, development and conservation.

The general aim of our Chicago PR program has been to enlist the confidence, support, and participation of citizens; to create pride in rebuilding Chicago; to maintain good working relationships with other governmental units; and to establish an understanding of the problems and objectives of the conservation-renewal program. The only valid gauge of the efficacy of the PR operation is how well it succeeds in creating the kind of favorable climate necessary to achieve the renewal goals of the city.

Actually, we have only made a beginning in Chicago. But the start has won an All-America City Award for the neighborhood organizations, energized to accomplish our goal: urban renewal.

George Kelly
Office of the Mayor

PR Sells Denver Bonds Successfully

THE people of Denver last summer voted to spend a record-breaking $75,000,000 to improve the water collection and distribution system. The immensity of the project was overshadowed only by the one-sided vote. More than 40,000 persons cast ballots and 37,862 voted for the bonds ... in a city where voting on such matters is usually very close with the negative side generally winning. How did this happen in Denver?

The Denver Water Board knew the public was ready for a vote after two summers during which stringent water restrictions had to be imposed. But the Board did not let this negative aspect, alone, convince the public. It set out two positive facts—the bond issue could be financed without an increase in water rates and the facilities would insure water supply until 2000—and built an information campaign around these. With the help of a professional public relations agency, every field of communication was utilized—newspapers (which did an heroic job); TV and radio; addresses by city officials, citizens, business men and persons prominent in labor groups; hard-hitting literature; and a brilliant color film. Mayor W. P. Nicholson says that it all "added up to the most effective educational campaign in the city's history" and that the citizen vote was a "convincing demonstration that an informed electorate will help city officials solve problems."

PR for Miami Growth

IN 50 years, Miami has grown from a mangrove swamp to a city with a permanent population of 725,000 and, last year, 4,000,000 visitors. By 1960, Miami is expected to have a million people, and the end of growth is not in sight.

This spectacular growth has been due to the development of activities in keeping with the natural advantages of climate and location and the telling of the Miami story to the world. This is the job of the Miami Publicity Department, supported by the city of Miami through a special tax millage approved in public referendum in 1935. From 1935 until the close of World War II, the publicity millage was spent to employ outside PR agencies to sell Miami for the winter season.

At the close of 1955, the tourist season has been extended to a year-round one; facilities and new attractions—sports, cultural events, family vacationing entertainments — have been developed for ever-widening appeal. MPD aims at selling Miami for year-round permanent living (for responsible, stable citizens) and as a good site for light industry, as well as for year-round vacationing and conventioning. We plan to continue pacing the Miami progress in 1956.

Maxwell Nathan
Administrative Asst.

PR for Dayton Complaints

IN 1951, Dayton City Hall was literally swamped with complaints and inquiries from citizens. This past year, complaints were cut to one-fourth the 1951 figures. What has happened in between is that a central information and complaint office has been established as part of the manager's office. It is operated under PR principles: the citizen is the most important ingredient in municipal government; he deserves a direct answer or efficient service; he should not be given a city hall "run-around."

Dayton not only has happier citizens and saves time, money and temper at city hall, as a result of the establishment of the information-complaint service, it also has found out these things about its citizens. The individual citizen wants to be taken seriously and prefers a mature "no," with reasonable explanation, to an evasive reply. The citizen is most often a responsible person: 71% of all he reports in Dayton needs correction or change. The citizen knows little about city government procedures and appreciates learning about them. The citizen is not a chronic complainer—our experience showing that 88% of our customers are "one-timers."

Roger V. Pearce
Administrative Asst.

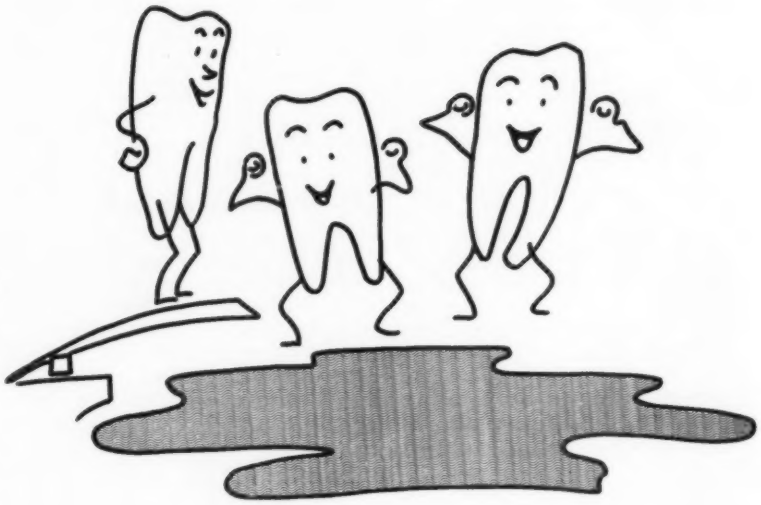
Corpus Christi Public Relations

A PROGRESSIVE city administration takes advantage of every point of contact in everyday city business. Corpus Christi found that this attitude has paid off and it is the basis for our 1956 operations. The city is also constantly alert to discover new ways in which relationships between the city government and citizens can be enhanced for the overall benefit of the community. Corpus Christi's day-by-day relations with citizens have been based on the following:

- Open door policy—for council members, the manager, department and division heads, and for citizens;
- PR training (in addition to job training, of course) for municipal employees, especially for counter-clerks dealing with the public;
- Informative, to-the-point answers to inquiries (via phone or letter);
- Tax statements, utility bills, other city communications which are readily understandable;
- Periodic reports—through all media—to keep people informed;
- Open house at city hall and special "free" programs at municipal auditorium and the coliseum;
- "Centers of information" readily available for citizens (switchboard operators, policewomen downtown, etc.); and
- Clean, attractive appearance of city-owned facilities—buildings, equipment, vehicles.

How Fluoridation Started in Orangeburg, S. C.

By J. F. PEARSON, *Manager*
Department of Public Utilities



THE relatively small application of one part of fluoride per 1,000,000 parts of water that appears to do so much for children's teeth has aroused a tremendous amount of excitement in a number of cities. For reasons of their own, a number of very competent water-works men have raised heated objections to the use of fluoride, asserting that it was a dangerous pollutant to the water.

This has not been true in Orangeburg. We apologize to no one for the quality of water we deliver. But we, in the Department of Public Utilities, do not attempt to make decisions for dentists, doctors, or other health authorities. Nor do we attempt to dictate city-wide policies for our mayor and council. If the dental, medical, and public health officials stake their professional reputations on their opinion that fluoride benefits the teeth and will not harm the body and, if in the opinion of our mayor and council, the public wants the fluoride added, it is our duty to make the application in a workman-like and reliable manner.

Orangeburg had its earliest first-hand introduction to fluoridation when school authorities, civic clubs, and local dentists arranged for the U. S. Public Health Service to bring a topical-fluoride demonstration unit to town. This unit applied fluoride to the teeth of several thousand school children. Later, these same organizations publicized the need for fluorides in public drinking water. The Department of Public Utilities then made known the fact that it had no objection to the treatment, but requested that it be taken up with the city council for a policy decision.

"Since we have started applying the fluoride, . . . no one has even called to say that his goldfish were dying. . . ."

The council had no objections to the request if the Department of Public Utilities would furnish the equipment and personnel required to perform the service. The department agreed to these conditions and the council then approved the treatment, instructing the department to arrange for the purchase of necessary equipment and material in accordance with the recommendations of the City Health Department and the State Board of Health.

Equipment and Material

Equipment that can feed minute amounts of chemicals to the precise limits that fluoridation requires obviously has to be efficient. For reasons of economy, we selected sodium silicofluoride as the chemical that would provide the fluoride ion to the water. Thus, we needed a feeder able to handle a dry chemical and to insure precision. We preferred to use the loss-of-weight method of control and wanted the feeding device to record the amount of material in the hopper at all times, to sound a recognizable alarm in case of a misfeed, and to have a dust-collector system to prevent any possibility of harm to the workman.

Two machines were available that would meet these general requirements. We visited several nearby plants using each type to see at first-hand how they worked and to discuss their performance with the operators. As a result of these investigations, we purchased an Omega loss-in-weight gravimetric Fluoridizer complete with an exhaust fan-operated filter bag dust collector to provide dust free hopper loading.

Problems Met Successfully

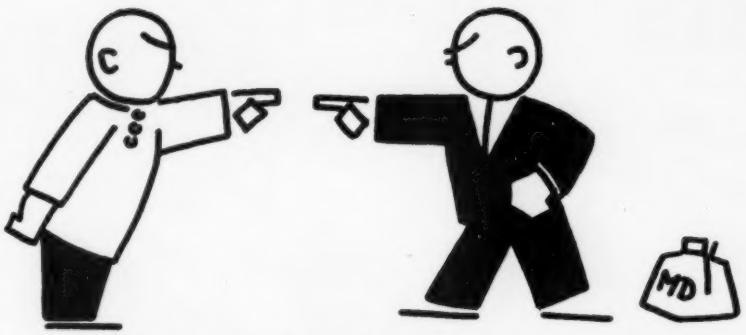
The use of sodium silicofluoride also presented certain problems. We had to provide an acid-resistant solution chamber and feed lines. For this purpose, we obtained 2-inch polyethylene-type pipe and fittings for the feed lines and a steel solution chamber, lined with cypress and coated with a bitumastic compound. The entire project cost approximately $3,800 installed. The sodium silicofluoride cost $8.10 per 100 pounds delivered.

The equipment went into operation on September 15, 1952, adjusted to produce the recommended concentration of 1 ppm in the water. We first tested it with soda ash to acquaint all operating personnel with the machine and to make final

adjustments. We switched to sodium silicofluoride on September 22—just seven days later.

We check the fluoride concentration by chemical analysis and by calculating the dosage, based on the amount of chemical fed in each 24-hour period, and the water pumped during the same period. The chemical analysis follows the Sanchis-Scott method, using permanent color standards. The average dose for the last 30-day period was 0.997 ppm, computed on the basis of the weight of chemical fed.

Since we have started applying the fluoride, we have had no complaints whatsoever. No one has even called to say that his goldfish were dying, that he had a liver complaint, that the water had a new and objectionable taste, or that we were an unwitting tool in a world-wide Communist plot to undermine the vigor and health of the freedom-loving people of Orangeburg. In view of the immense amount of excitement that this type of treatment inspires elsewhere, we feel most fortunate that the residents of Orangeburg have adopted such a calm and objective attitude.



"If the dental, medical, and public health officials stake their professional reputations on their opinion that fluoride benefits the teeth and will not harm the body . . . it is our duty to make the application in a . . . reliable manner."

At present, we have not had the treatment under way long enough to test its value in reducing the incidence of dental trouble in the teeth of our youngsters. Our city and state health officials, however, have confidence that we will match the record of other cities where the fluoride appears naturally in the water, or has been applied artificially over long periods of time.

Greendale Being Developed by Private Enterprise

THE village of Greendale, Wis., one of the three federally built suburban rental housing projects of the "greentown" type, is being further developed by the Milwaukee Community Development Corporation, a private corporation established by the Allis-Chalmers Manufacturing Company, the Kearney and Trecker Corporation, and the Boston Store Foundation.

The highlights of the village's change from a federal to a private project are briefly as follows:

In 1938 the first families were admitted to the village, where the federal government constructed 366 residential buildings containing 572 living units. Selection of tenants was based on housing need, income, and reliability. The federal government also installed streets and public utilities, a fire and police station, a school, library, administration building, and shopping center.

In 1945 two subdivisions were platted for residential building by private persons, and the federal government dedicated the streets, walks, and parking lot to the village board.

The residents of Greendale were permitted, in 1952, to purchase the single- and multifamily dwellings; utilities were sold to the Wisconsin electric and telephone companies; and other public buildings, grounds and facilities became the property of the village. A year later the administration building, shopping center, and the remaining 3½ square miles of undeveloped land were sold to the Milwaukee Community Development Corporation, which now owns 70% of the total land area of the village.

Plans for the Area's Development

The development corporation will construct nearly 300 single-family homes in a $7½ million residential building project. Selling prices will range from $14,000 to $35,000. Land will be reserved for future commercial needs of the growing village, for suitable light manufacturing industries, and for suburban office buildings. The corporation will pay for the installation of residential streets, water mains up to 6 inches and sewer mains up to 8 inches, and the village will pay for village traffic streets and larger water and sewer mains.

The residential area will be expanded gradually from the village center to minimize the expense of installing streets and utility services. Village officials anticipate that the planned growth of Greendale will reduce the per capita cost of government and the property tax rate for village and school purposes.

Although the present population of Greendale is only 2,800, bonds will be sold to finance construction of a 1,200 pupil high school that should be completed by September 1956. Tuition fees to be paid by nonresident students (about one-half of the enrollment in the first unit of the school) will be applied to annual debt service costs for high school construction purposes.

Greendale's Government

Greendale adopted the manager form of government in 1939. Only the village president, six village trustees, and the justice of the peace are elected. All other village officers and employees are appointed by the village manager. The voters also elect the directors of the common school and high school districts, independent governing bodies that are coextensive with the village.

In 1955 the village board and common school district were providing 139 activities, distributed 44% for general government; 25% for health, sanitation, streets, and water supply; 17% for education and recreation; and 14% for fire, police, and safety.

EDITOR'S NOTE: Some of the previous articles on Greendale that have appeared in THE AMERICAN CITY are as follows: Sept. 1954, p. 207; Mar. 1953, p. 113; Jan. 1949, p. 73; June 1948, p. 106.

A skilled operator on this big Caterpillar grader and scarifier starts the work off soundly.

"The Best Streets — Anywhere"

A mayor spearheads a street program using soil cement and asphalt

By WILLIAM D. HIATT
Mayor
Tipton, Ind.

SOMEBODY will break an axle and maybe kill himself if you don't fix that hole in the street in front of our house. Aren't you going to do something about it?

We had heard that complaint so many times that we were getting sick of it. Unfortunately, it was true. Our streets were bad; our street crews were working overtime trying to plug those holes, but it was a losing proposition. Moreover, the police department was having problems with traffic regulations and parking. We wondered whether all these problems were related. Later, we found that they were.

About the Author

Mayor Hiatt, a native Hoosier, is a graduate of Wabash College and came to Tipton as a chemistry teacher. He was later elected to the city council and, in 1951, was "drafted" to run for mayor. The voters returned him to office last November for a second four-year term without opposition.

Our present administration took office in January 1952. For the five councilmen it was their first experience in public office. I, as mayor, was a veteran councilman with five years of service behind me. However, our beginners learned quickly, as they usually do.

One of our first lessons showed us that by patching holes we couldn't build good streets. During the first summer, we spent $8,500 for materials alone, just to patch streets, and hadn't gained any ground at all. In fact, the streets were worse than they were at the beginning. A little study showed that in the past 10 years, we had spent $93,000 for street materials, mostly patching. If you add an equal amount for labor, you can understand our dilemma.

We weren't short of advice. There are some people who don't pretend to know how to purify water, to treat sewage, to dispose of garbage. But almost everyone is convinced that he knows how to build a street, and doesn't hesitate to tell you so.

Fortunately, we have a civil engineer on our council, Richard Cochran, whom we appointed as chairman of our Street Committee. With the aid of City Engineer Lyle Clymer and Street Commissioner Don Coffin, he examined our streets block by block, studied structures, measured widths, examined curbs, noted drainage, counted cars and traffic patterns, and estimated parking space. This team then prepared a large wall chart that showed the character and condition of every street, and also gave us a 25-page report on street conditions. This was mimeographed and distributed to the public.

What the Report Revealed

From this report, we learned that Tipton has 22 miles of streets. Of these, 2 miles are the responsibility of the State Highway Department; 8 miles are of high-grade construction, with curbs, but in need of immediate resurfacing; 4 miles were in fair to poor condition, wearing away at the rate of ½ inch per year; and the remainder were unimproved. The report went on to say that the present practice was a total loss as far as bringing us any lasting benefits. It urged additional funds for new construction and quoted road experts who said that we were spending more to use bad streets than to build new, good ones.

The price tag on reconditioning 16 miles of poor streets by older, conventional methods was $329,000, and this simply didn't fit into our municipal budget. But something had to be done and we finally found a

The truck (left) spreads the cement while the mixer (right) blends it with the soil.

way to cut the costs by two-thirds.

Somewhat earlier, I had experimented with a mixture of fill dirt and cement to make a garage floor and had enjoyed most favorable results. Later, I began to notice items here and there about soil cement used for airport landing strips. Then, one day, I read a story in THE AMERICAN CITY about soil cement and, in a later issue, an advertisement on soil cement by the Portland Cement Association.

This convinced me that here was something that should interest Tipton. I immediately sent a letter to the Indianapolis office of the Portland Cement Association, and promptly was visited by a representative who showed a film on the subject to the city council. Since it was a touchy subject, we arranged for interested citizens to attend, also. About 200 saw the film. All were impressed with the possibilities.

Inspection Tour Arranged

We then arranged to inspect the few miles of soil cement constructed by the Indiana Highway Commission. We visited state road engineers, engineering professors at Purdue University; we compared costs, qualities, durability. Then with our own employees, we laid two blocks of soil cement and compared it with two blocks of bituminous-concrete laid on a macadam base. We wound up casting our vote for soil cement.

Over the years, our street crews had hauled in and placed many yards of gravel on our streets. Soil-cement construction allowed us to take full advantage of all this material. Analyses showed that the base could be stabilized if 6% to 14% were cement. Mixing the material in place would reduce handling expense materially.

Soil-cement construction with a hot-mix top compared closely with a flexible macadam construction in costs. But we preferred the solidity of soil cement. Because most of the streets carry little truck traffic, we are confident that this type of construction will be entirely adequate for at least 15 years.

We had to get used to the difference between soil cement and common concrete. Soil cement uses

The sheep's-foot roller, pulled by a Caterpillar crawler tractor, compacts the base to a dense, firm condition.

All in favor say "Aye"

In any town council that is really on its toes, the answer would be unanimous in favor of replacing bulky, old-fashioned lighting poles with slender NATIONAL Tubular Steel Poles.

A brief investigation would show the members that NATIONAL Steel Poles have everything – grace, beauty, and practicality. Because they are so slim, they are not visual obstructions and offer no traffic hazard. As lighting poles they are unexcelled. And, when used for holding trolley wires, their strength easily supports the tightest lines, yet the poles needn't be spaced nearly as close together as the old-fashioned standards. They are easy to rig and erect, too, with a minimum of manpower. And an occasional coat of paint keeps them looking like new.

Civic officials who choose NATIONAL Tubular Steel Poles make the wisest of decisions. You'll be making a wise decision too, when you select NATIONAL Tubular Steel Poles to serve *your* community.

For further details, write to National Tube Division, United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa. Ask for Bulletin No. 14.

NATIONAL TUBE DIVISION, UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.
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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

NATIONAL *Tubular* STEEL POLES

UNITED STATES STEEL

These two pictures show Tipton's North Street before (left) and after (right) its soil cement construction. Mayor Hiatt finds that such improvements are always followed by painting and improving of adjacent properties by their owners.

material in place; it is mixed in place; water content is carefully gauged and the finished product depends strongly on compaction for the strength it develops. Properly moistened and compacted, it develops surprising strength.

Public Approves

To make sure that the public knew and approved of our proposed program, we made maps and plans showing exactly what we would like to do. We then called a public meeting and laid out all the details for everyone to see. This is supposed to be a dangerous procedure, but we encountered no opposition, so we proceeded to sell the bonds and get going. This taught us one important lesson in municipal government—people don't seem to mind paying taxes when they know that they get what they pay for.

We arranged a $100,000 bond issue, to be paid in 10 annual installments. Thus we can use the streets as we pay for them, and will not burden another generation with the costs. The new streets will reduce our maintenance costs, thus making the total street expense about equal. City Attorney Fred Surber arranged for the sale of bonds at the favorable interest rate of only 1.75%.

With the financing assured, we then awarded contracts for the work. The successful bid for processing the soil-cement base was 48 cents per square yard with cement bid at $3.69 per barrel. A competitor bid 40½ cents per square yard for processing with cement at $4.80 per barrel. However, calculations showed that the first bid was slightly better. The successful bid for hot-mix surfacing was $7.99 per ton, laid.

Since the durability of any pavement depends upon drainage, the first operation is that of grading the street. This must be done carefully to avoid losing any granular material. The scarifier breaks the street to a depth of 6 inches. If the street grade must be lowered, the grader blades the top material into a windrow at the side and removes the underlying material. Sometimes a new oil mat has to be removed. Occasionally, where the street has to be widened, we add new gravel to our naturally black loam. A good blade man on this work is a jewel much to be desired.

Next, the Seaman mixer goes over the scarified material and pulverizes it thoroughly. Cement is then added, generally in bulk, but sack cement can be used. Depositing the proper amount is not difficult, but is highly important.

Mixing and Compacting

Now comes the dry mix, best done when the ground is not completely dry. In fact, in very dry weather it may be advisable to add a little water to the soil before placing the cement. After the Seaman mixer blends the soil and cement, a pressure distributor gradually moistens it until it reaches an optimum content. A good rule of thumb is to add water until the material will form when squeezed in the hand, but no water can be squeezed out.

For compaction, we use a sheep's-foot roller because it begins compacting at the bottom and finally rolls out as the base becomes firm. Good compaction is very important. We finish with a pneumatic roller and a heavy smooth roller. Between compaction and rolling, the surface is scraped lightly with a blade to smooth out the ridges.

A smooth, even surface on the soil-cement base is important economically. If the base is uneven, we have to use more hot mix to smooth out the variations. We have found that a smooth surface for our soil-cement base will mean a savings of as much as 5 pounds of hot mix per square yard.

To cure our base, we chose a cut-back asphalt, covering it with rock chips, and opening the street to traffic after three or four days. Straw or earth also can be used, but the use of the asphalt and chips permits us to incorporate the curing into the finished street. Traffic does not seem to injure the relatively new pavement, since the subbase has scarcely been disturbed and the base itself is highly compact.

Subbase Strengthening

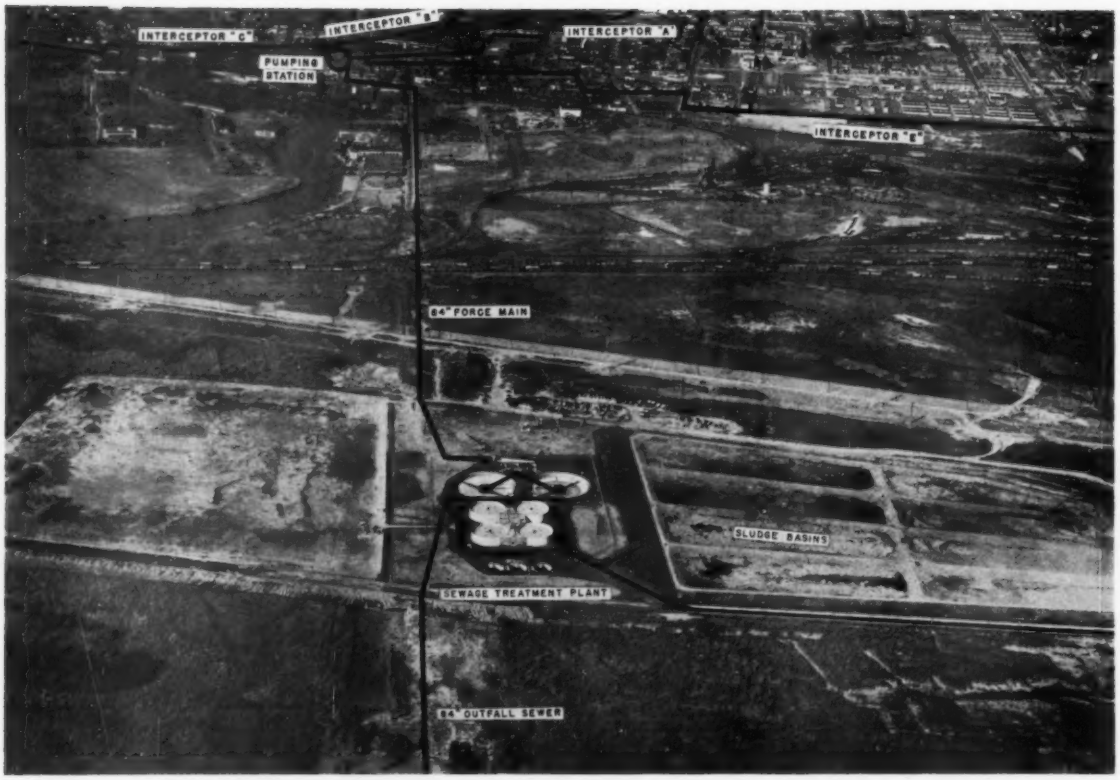
Of course, the subbase has to be strong and not subject to deterioration. We had some spots with quicksand under the street. These we strengthened by first removing the top 6 inches, then laying a 4-inch subbase of soil cement, topping it with our regular base construction. To date we see no signs of trouble.

Some may wonder about manholes and other street openings. We removed the manhole castings, and placed heavy wood covers over the openings in such a way that the processing was done right over them. The manholes were carefully located and later cut open so that the rings could be replaced. This gave us a good, smooth-finished job.

Setting Curbs

In some of our streets, the curb and gutter was already in place. In one stretch of about ½ mile, we placed new curbs and gutters. We have established a policy of setting new curbs not less than 34 feet apart, thus providing parking on both sides of the street and leaving two traffic lanes. Anything less than this width might as well be 8 feet narrower because it will not provide

(Continued on page 196)



The plant, its outfall, force main, pumping station, and four of its interceptors, form the heart of this area-wide sewerage system.

Sewage Problems Can Be Solved Without Separate Districts

Wilmington, Del., and the suburban area show how to build an integrated sewerage system without creating an extra level "authority" government

WILMINGTON, Del., and surrounding New Castle County have shown that a sewage-treatment plant and interceptor sewers can be built without resorting to the extra layer of government often known as an "authority," a "board," or a "district." By contract alone, the city and the county commissioners have developed a well-coordinated system of sewerage to serve a population of about 250,000 persons, using the existing local government structures.

The sewerage system embraces the entire northern half of the county. It receives sewage from areas near the Pennsylvania and the Maryland state lines. Nearby Newark, Del., also contributes.

Legislation Needed

With the help of the enabling state legislation, the city and the county are able to finance the system by a sewer-service charge that makes the system self-supporting. Although the bonds issued to pay for the work are of the general obligation type, backed by the faith and credit of the city, they were not mandatory. Revenue bonds based on earnings could have been used. However, they would not have commanded a favorable rate of interest.

This area-wide approach to sewerage problems has many cost-saving features. First, it calls for only one plant. Next, the system separates the storm water from sanitary sewage, and thereby reduces the volume needing treatment. Moreover, because of favorable river conditions, the plant has to provide only primary treatment that removes the settleable solids. Chlorination or other secondary treatment is not needed.

The 84-inch force main extends through a marshy area.

(Above) The main pumping station eliminates a bad point of pollution, turning it into a boat harbor. (Below) Five big and sturdy pumps send the sewage to Wilmington's new sewage-treatment plant.

Despite these advantages, an adequate system of interceptor sewers, pumping stations, and treatment facilities involved a project amounting to nearly $13,000,000. To design the plant and supervise its construction, the city and county called on the services of Whitman, Requardt and Associates, consulting engineers, of Baltimore, Md.

Five Interceptors

The first problem was to collect the sewage and bring it to the treatment plant, requiring the construction of five separate interceptors varying from 30 to 72 inches in diameter. For this purpose, concrete pipe was used with rubber gasket sewer joints. The lines were designed to permit leakage of no more than 100 gallons per mile of pipe per inch of diameter.

A main pumping station receives the flow from the interceptors and was designed to pump 160 mgd (million gallons daily) of combined sewage and storm water. This station, the engineers believe, will be adequate for many years in the future—far beyond the life expectancy of the treatment plant itself. The storm-water flow, being dependent on weather, will never exceed the anticipated 100 mgd unless one of those tremendous storms appears that normally would be expected only once in 500 years. The flow of sanitary sewage, however, can be expected to increase from the present design figure of 30 mgd to possibly 60 mgd. Moreover, the wet-weather pumping rate of 160 mgd even at this time is more than 2½ times the dry-weather rate of 60 mgd, an accepted practice for combined sewage-pumping stations.

Pumping Station

The pumping station also serves as a removal point for large solids. The sewage enters the station through two channels, each protected by two bar screens. One has 4-inch openings and the other, 1 inch. A Link-Belt mechanical rake collects the debris from the large-opening screen and deposits it on a conveyor belt that discharges into a dump truck parked nearby. A similar mechanical rake removes the material from the small bar screen but delivers it to a chute that leads to a pair of Chicago Pump Company comminutors. These shred the solids and return them to the raw-sewage wet well. Normally, these comminutors are placed in the channel itself, without a bar screen. However, this arrangement permits the use of much smaller comminutors at substantial savings.

Main Pumping Units

The sewage then flows to the pump room where five Worthington nonclog pumps pick it up and deliver it to the plant through an 84-inch Lock Joint reinforced concrete pressure pipe about 1 mile long. Each of the pumps is of the two-speed type, capable of operating at the rate of 22 or 40 mgd. To protect the pumps against water hammer when they are shut down, the designers supplied them with cone valves on the discharge side. Each such valve is designed to close at a slow, predetermined rate to cushion the jarring effect of a sudden flow stoppage. In addition, each pump is equipped with a pair of gate valves, one at the inlet side and the other at the discharge side of the cone valve.

The pumps themselves are powered by Electric Machinery Corporation motors. A Simplex Valve and Meter Company venturi meter in the force main measures the sewage-pumping rate and provides a record of the daily flow.

Sewage arriving at the plant first

HOLOPHANE REFRACTORS Help to Triple Lighting Efficiency *on the* George Washington Bridge

The Great Light Way over the Hudson is perhaps the most brilliantly illuminated thoroughfare in the New York area . . . The new lighting system for the George Washington Bridge (first major replacement since the span's opening in 1931) includes two hundred mercury-vapor lamps in Holophane Refractors . . . . With their prismatic control the Refractors offer these advantages: (1) maximum concentration of light on the roadway (2) uniform light distribution with brighter pavements (3) greater visibility distance (more illumination per dollar) . . . Another Holophane contribution for better, safer night driving through more effective lighting.

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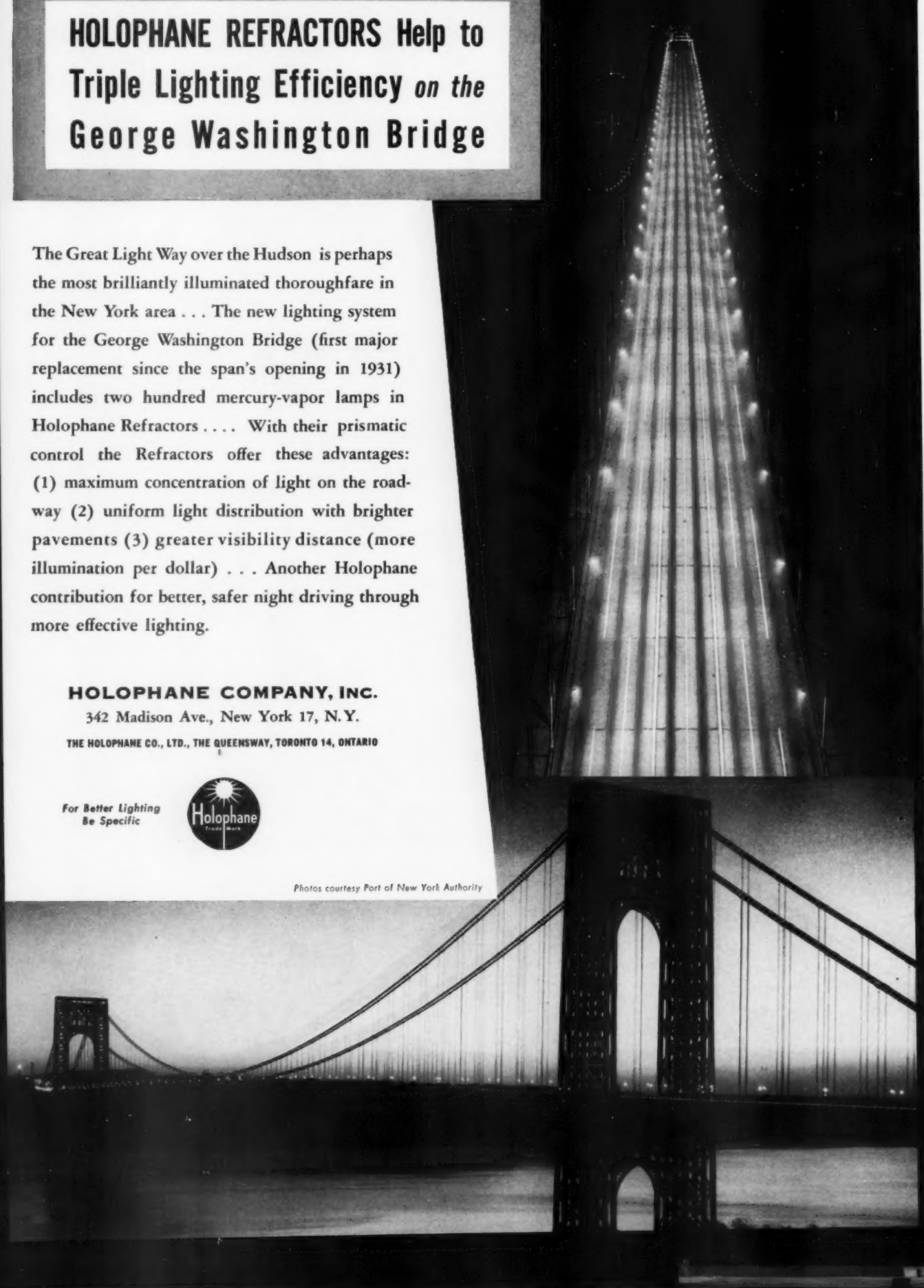
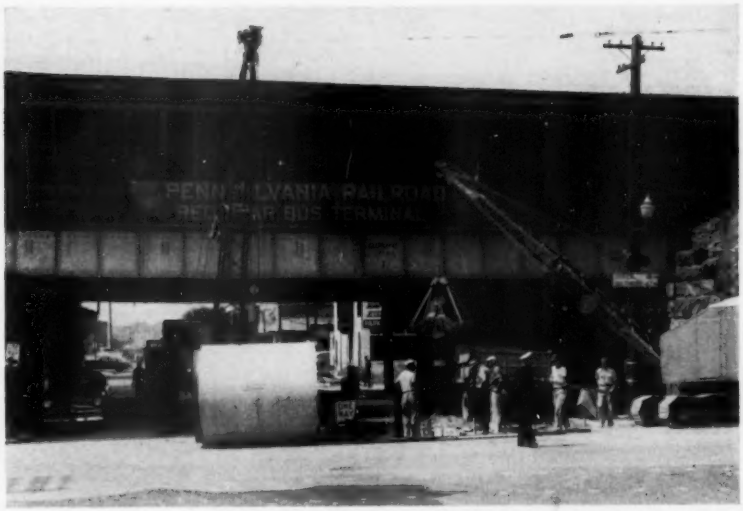


Photos courtesy Port of New York Authority



Two Northwest cranes work delicately to place a 78-inch interceptor at this point.

passes through a pair of Dorr Detritors to remove the inorganic grit. Each is 45 feet square and can receive sewage at the rate of 40 mgd, or 20,000 gallons per square foot per day. The grit is removed and transferred to a storage area by an ejector unit made by Pneumatic Ejectors, Inc.

Settling Basins

The grit-free sewage then passes to two large circular settling basins, each 160 feet in diameter and with a 10-foot sidewater depth. These basins provide a detention period of 2.2 hours at a design flow of 20 mgd. The surface area factor used in their design is 1,000 gallons per square foot per day at the same rate. The sewage, free of nearly all its settleable solids, then passes through an 84-inch concrete outfall sewer, discharging 200 feet from the shore at a point that is 35 feet below the water surface.

Sludge collected in the settling basins by Dorr Clarifier mechanisms is transferred by Carter plunger-type pumps to elutriation tanks in order to thicken it and wash away products that might interfere with digestion. There are three of these tanks, each equipped with Dorr sludge-removal equipment. Each tank is 40 feet in diameter with a 10-foot sidewater depth. The tanks provide a single washing of the sludge, combining it with four parts of river water to one part of sludge, and permitting it to settle for three hours.

The sludge is then pumped to four digesters, first passing through Pacific Flush Tank heaters to bring the sludge to an optimum digestion temperature of 90° to 95° F. The heaters are capable of delivering 1,000,000 BTU per hour and use gas produced in the digestion process for fuel.

The digesters are each 90 feet in diameter and have a 30-foot sidewater depth, thus providing a volume of 2 cubic feet per person at a population of 400,000. Each of the digesters has a Pacific Flush Tank floating cover capable of collecting the gas generated during digestion.

Sludge Basins

The sludge remains in the digesters for an average of 60 days before being released to large open sludge basins. These inexpensive lagoons will be able to store the sludge for at least 10 years before requiring removal. Already, farmers have expressed an interest in hauling the sludge away for fertilizer, thereby extending their useful life.

Financing

As mentioned previously, the total cost of the sewerage improvement was slightly under $13,000,000. Of this, the interceptors represent approximately 44%; the pumping station, 23%; the treatment plant, 22%; the land and other miscellaneous items, 6%; and engineering, 5%.

Bonds to finance the work sold at the encouraging rates of 1.5% to 2.7%. The serial maturity of the bonds of each issue was adjusted so that the combined interest and principal would increase slightly in the future. Bonds will be paid by 1993.

Although the bonds are of the general obligation type, the city and county elected to pay for them by a sewer-service charge rather than an increase in taxes. Wilmington started to raise funds in 1951 by making a sewer-service charge amounting to 25% of the water rates.

Later, the city raised it to 50%, making it equivalent to the following rate:

Cubic Feet of Water	Per 1,000 Cubic Feet
First 2,000	$0.525
Next 3,000	0.42
Next 19,995,000	0.385
Next 30,000,000	0.24
Excess	0.10

A 5% discount is allowed for prompt payment.

The same charges are assessed against New Castle County and bring the city a revenue of approximately $100,000 per year. The charges are based on flow through sewage meters located at various interceptor points. The county charges those connected to its system at the following rate:

Gallons of Water (per quarter)	Per 1,000 Gallons
First 300,000	$0.10
Next 600,000	.09
Next 2,100,000	.08
Next 6,000,000	.07
Excess	.06

These bills, too, are discounted 5% if paid promptly.

In addition, the county maintains all sewers and pumping stations except those in Wilmington and in Newark. Two sewage meters are installed at the Newark city limits.

Parent City Leadership

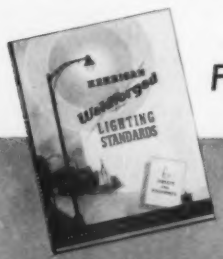
Thus, with this arrangement, the parent city supplies the leadership, and the supporting suburban areas and their municipalities coordinate their work with the parent city, all within the framework of the existing governments. The simplification and coordination of effort without the complications of overlaying governmental "authorities" with assigned responsibilities, have made the improvement of definite advantage.

The area-wide sanitation program developed under the administration of Mayor August F. Walz. Its operation is the responsibility of the Street and Sewer Department, with Vaughan Clavey serving as president of the board. Edwin F. Koester is chief engineer; William C. Henry is superintendent of sewage treatment.

West section of Nashville's new shopping center housing 21 different stores.

TWENTY-NINE beautiful, octagon shaped, continuous tapered Kerrigan Weldforged steel lighting standards, mounted 30 feet apart, light the parking area for the new Green Hills Shopping Center in Nashville, Tennessee. It is the largest single parking area in Nashville and provides space for nearly 1200 automobiles. Built at a cost of about $80,000.00, parking spaces are 9 feet wide with 65 feet between sections. The ratio of parking to shopping space is 4.5 to 1, where in most centers it is only 3 to 1. The 185,000 square foot building is circled by a cruising lane for customers to pick up packages and waiting friends.

Kerrigan lighting standards are now found in cities all over the country—in parks and parking centers, on streets, highways and bridges—wherever there is a need for modern lighting. Made from J&L's low-alloy, corrosion resistant steel, Kerrigan Weldforged standards weather both the elements and the years. Write now for new catalog.



For better lighted city streets the standard is Kerrigan!

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General Sales Office 274 Madison Ave. New York City

Some of Quincy's fire-fighting equipment displayed against a background of the City Hall and central fire station.

Steve Edwards of Quincy, Fla.

ONE morning in 1909, a tall country boy walked into the fire station at Quincy, Fla., and asked for a job. He couldn't know that he was going to be the first person to combine the positions of city manager, fire chief, and building, plumbing, and electrical inspector.

Steve Edwards liked horses and mechanics, and he set out to learn something about both the fire department and the city as a whole.

As years rolled on, the City of Quincy, Fla., became involved in financial difficulties. In the darkest times the citizens of Quincy turned to Steve Edwards and he was made City Manager and Fire Chief.

When, in 1948 the time came for Steve Edwards to take life a little easier, he was offered the city manager's position or the chief's. He chose that of chief. Today, Quincy boasts a modern fire department with modern apparatus that includes a new American-La France pumping engine and new B&B "Pentefold" R-A-X fire alarm equipment. The many visitors who come to see the Quincy fire department are impressed with the standardization of the alarm and fire-fighting equipment.

Before the modernization of the fire department, the matter of fire alarm telephones versus fire alarm telegraph was given considerable thought. Quincy has the unique position of having an independent telephone company. Nevertheless, upon weighing all of the factors, Chief Edwards decided in favor of installing a modern fire alarm telegraph system in the existing department building.

Voice communication between all city departments and fire apparatus is maintained by two-way F-M radio. The department is staffed by Chief Edwards, two assistant chiefs, and six paid men supplemented by volunteers. The fire alarm telegraph system has given extra value in assembling the volunteers.

Quincy's industries could make a nice fire, as they consist principally of cigar factories, tobacco warehouses, and box factories. Most of the plants and factories are connected directly to the fire department through both the fire alarm telegraph system and private line system. Prompt response to alarms has produced a good fire record and has kept Quincy's businesses in business.

Fire Chief Steve Edwards uses the "fire-phone" on his new "Pentafold" R-A-X fire alarm telegraph switchboard.

Shelter and toilet facilities are provided in this simply designed pavilion in University City's largest park.

Park Improvement Program Features Good Design

By C. I. LINHART
Director of Parks and Recreation
University City, Mo.

THE simple pavilion and the extensive picnic area shown in the photographs in this article are part of a $310,000 park improvement program that is being completed in University City, Mo. The program, which has been financed by a bond issue approved in February 1951, has featured the improvement of nine existing parks and one golf course and the development from scratch of three additional parks.

University City, a suburb of St. Louis, has about 55,000 residents within an area of 5.8 square miles. It is expected that this total will rise to 65,000 in the foreseeable future. With 236 acres of parks and about 16 acres of parkways, our recreation areas range in size from 1.6 acres to 96 acres in our municipal golf course.

The pavilion, which is one of several spotted throughout the University City Park system, is located in Heman Park, our largest (85 acres) and most centrally located recreation facility. Combining both utilitarian and esthetic features, the pavilion consists of a paved 26-foot by 37-foot canopied area, toilet facilities for persons using the park, and a storage room accessible from the rear of the building. The structure is located next to Heman Park's eight tennis courts. It was built primarily to serve tennis players and secondarily for picnic groups and the general public.

Constructed of rustic brick, the pavilion has stone louvers instead of breakable windows to ventilate the washrooms. Two plastic domes in the roof afford light for the interior, which is faced with glazed tile for cleanliness. The doors of the building are covered with plate steel. The contract price for the pavilion, including concrete walks, necessary steps, and architectural fees, was $14,560.

The picnic area, which is also located in Heman Park, was developed in stages by our own Parks and Recreation Department crew. It is located in an extensive grove of trees near the southern end of the park. The work on the area consisted of grading and laying down topsoil in certain areas for playfields, developing a driveway and parking fields near the picnic area, equipping several tot lots, constructing nine stone fireplaces, and building 125 picnic tables and benches.

The surface of the picnic area con-

The picnic area in Heman Park contains city-built tables and benches produced from special design which is illustrated below.

sists of a base of solidly packed cinders covered with a thin layer of topsoil supporting a good stand of grass. This combination provides a fine all-weather surface for picnicking, since rain water drains through easily. The cinders had been laid down many years before when part of the grove was located along a now abandoned right-of-way and loop for St. Louis streetcars. The trolleys dumped the cinders from the coal-burning stoves used in those days.

The 125 picnic tables were assembled by our own men using the design shown in the accompanying diagram. The steel frames, which were built in accordance with this design, were purchased complete from a local steel company. With a team of two men working on the assembling, the frames were drilled, the lumber seats and table tops bolted in place, and the frames covered with an adequate coat of aluminum paint.

Cost Tabulation for Picnic Tables

Materials costs for 60 tables:

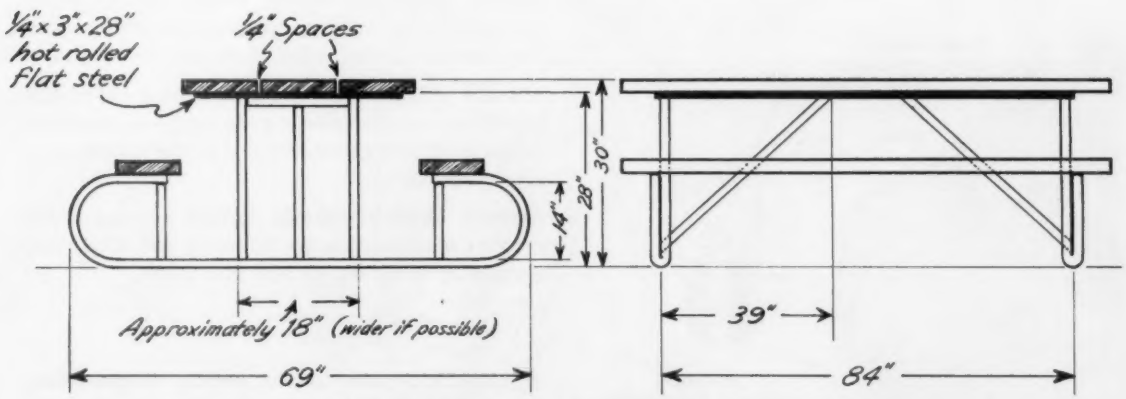
Lumber, Penta-treated	$ 689	
Cleats	92	
Bolts	40	
Steel	987	
Total	$1,808	
Materials costs per table		$30.13
Labor costs:		
Per day for two men	$23.04	
Per table at rate of 3 tables per day		$ 7.68
Total Cost per table		$37.81

Although the nine stone fireplaces that were built totaled $2,105, thus averaging $234 each, two were equipped with flues and cost $450 each. The high cost of the fireplaces equipped with flues caused us to abandon this design.

Other expenditures for development of the picnic area were:

- $6,000 for grading and hauling dirt for open spaces planned for playfields;
- $7,000 for grading and surfacing driveway and parking spaces, using 752 tons of macadam, 419 tons of torpedo gravel, and 22,000 gallons of asphalt; and
- $3,600 for the development of each tot lot.

Each play area for small children was equipped with an American Playground Devices Company slide, a swing gate and hobby horse set manufactured by the J. E. Burke Company of Fond Du Lac, Wis., one Miracle Wheel merry-go-round, a Game-Time, Inc., mountain climber, and three 3-foot sewer tubes.



Design of University City's picnic table and benches.

Greater protection against THIS!

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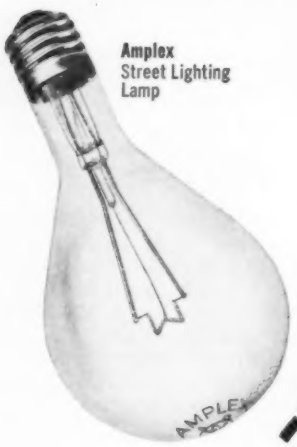
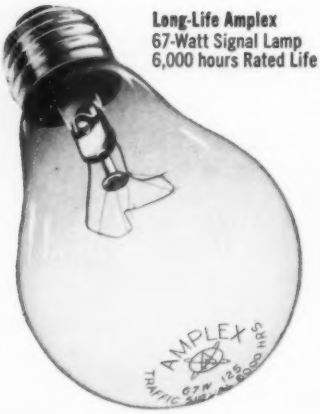
LAMPS FOR STREET LIGHTING AND TRAFFIC SIGNALS

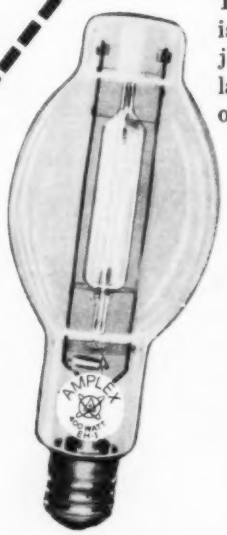


Amplex
Street Lighting
Lamp

The greater, more dependable light of Amplex lamps is a proved deterrent to traffic accidents, pedestrian injuries and crime. There is a complete range of Amplex lamps for every municipal requirement – no need to order from *several* sources:



Long-Life Amplex
67-Watt Signal Lamp
6,000 hours Rated Life



EH-1 400W
Mercury Vapor Lamp
6,000 hours Guaranteed Life

AMPLEX MERCURY VAPOR LAMPS give twice as much light for wattage consumed, with burning life several times longer than incandescents.

AMPLEX SERIES AND MULTIPLE STREET LIGHTING LAMPS are available in a wide range of sizes and types for greater economy and better maintained city systems.

AMPLEX TRAFFIC SIGNAL LAMPS are noted for greater resistance to traffic shock and vibration. Available in 40, 60, 67 and 100 watts.

● For full information, write to **amplex Corporation, Dept. AC-256, 111 Water St., Brooklyn 1, N. Y.**

Reappraisal

Key to a modern assessment system

A distinguished assessor describes the step by step method of city-wide reappraisals

By RICHARD A. CHERNEY, C.A.E.
City Asssessor, Ft. Madison, Iowa

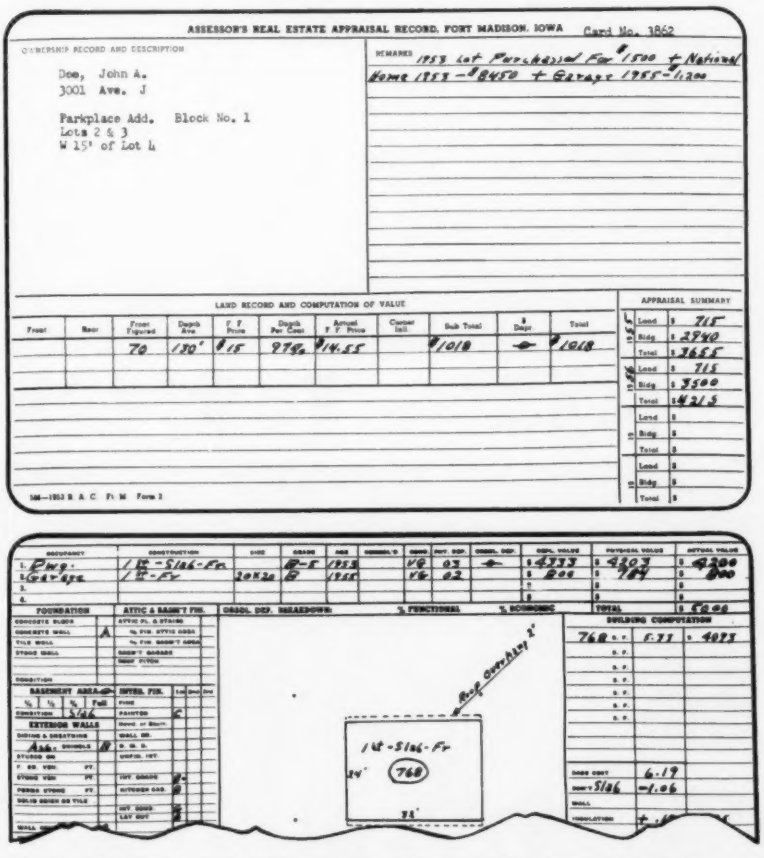
TAXES and assessments have been a headache of local governments for many a decade, and the chances are that they will continue to be a knotty problem in the future. But in recent years the tax problem has become acute. This has occurred as a result of the tremendous increase in public expenditures needed to finance expanded facilities and services for our growing urban population. It has also resulted from the public's demand for a higher standard of services. Because a modern assessment system can help many cities and towns ease this fiscal pressure, this article is written to acquaint local officials with the importance of reappraisal studies in developing an up-to-date assessment system.

A reappraisal program is the basis of a modern assessment system. Without it, it is unlikely that there can be any marked improvements in the equality of local assessments. A reappraisal program is a systematic, detailed revaluation of all the real property within a municipality. Essentially, this consists of inventorying and valuing all of the real estate using tried and proven mass appraisal techniques. Briefly the four phases of this program are: (1) setting up the permanent appraisal records, (2) accounting for all of the land within the jurisdiction, (3) valuing the land, and (4) valuing the improvements.

Good Records Essential

A reappraisal program requires a carefully devised system of permanent records. These are necessary to record: (a) the detailed information assembled regarding each property; (b) the appraisal of the property; and (c) a record of events affecting this property since it was appraised. A typical form that has been developed to accomplish this is the *assessor's real estate appraisal record card.* It is the basic record in the assessor's office and is the foundation for the assessed valuation of real estate. It is a continuing record, for future assessments are made on it as the value of the property changes.

The first step in undertaking a reappraisal program is to prepare a real estate appraisal record card for each of the properties within the jurisdiction. On this card is recorded the owner's name, the address of the property, the legal description of the


ASSESSOR'S REAL ESTATE APPRAISAL RECORD, FORT MADISON, IOWA Card No. 1862

OWNERSHIP RECORD AND DESCRIPTION

Doe, John A.
3001 Ave. J

Parkplace Add. Block No. 1
Lots 2 & 3
W 15' of Lot 4

REMARKS 1953 Lot Purchased For $1500 + National Home 1953 - $8450 + Garage 1955 - $1200

LAND RECORD AND COMPUTATION OF VALUE

Front	Rear	Front Figured	Depth Ave.	F. F. Price	Depth Per Cent	Actual F. F. Price	Corner Infl.	Sub Total	Adj.	Total
		70	150'	$15	97%	$14.55		$1018		$1018

APPRAISAL SUMMARY

1955	Land	$ 715
	Bldg	$ 2940
	Total	$ 3655
1956	Land	$ 715
	Bldg	$ 3500
	Total	$ 4215
	Land	$
	Bldg	$
	Total	$
	Land	$
	Bldg	$
	Total	$

1 DWG - 1½-Sto-Fr — 1955 — 1½ — 1456 — $ 4733 — $ 4203 — $ 4200
2 GAR-RPE — 1½-Fr — 20x20 — D — 1955 — VG 02 — $ 206 — $ 184 — $ 200
3. — $ — $ — $
4. — $ — $ — $
TOTAL — $ 4939 — $ 4900

FOUNDATION: CONCRETE BLOCK; CONCRETE WALL; TILE WALL; STONE WALL; CONDITION; BASEMENT AREA ¼ ¼ ¼ Full; CONDITION Slab; EXTERIOR WALLS; SIDING & SHEATHING; Asb. SHINGLES; STUDDED ON; F. BR. VEN. FT.; STONE VEN. FT.; FRAME STONE FT.; SOLID BRICK OR TILE

ATTIC & BASM'T FIN.: ATTIC FL. & STAIRS; ½ FIN. ATTIC AREA; ½ FIN. BASM'T AREA; BASM'T GARAGE; SHED PITCH; INTER. FIN.; PLYWD.; PAINTED; Wood or Brick; WALL INS.; U. S. G.; UNFIN. INT.; INT. DOORS; KITCHEN CAB.; INT. DOOR; LAY OUT

OBSOL. DEP. BREAKDOWN: % FUNCTIONAL; % ECONOMIC

BUILDING COMPUTATION: 768 x F.77 x 4923

Roof Overhang 2'
1½-Sto-Fr
24' (768) 32'

BASE COST 6.19
Base: Sto 1½ = 1.06
WALL
FOUNDATION +.

An essential tool of a reappraisal program. The assessor's real estate appraisal record is the repository of all basic information necessary in assessing a property.

property, and its present assessed value. The cards are then sorted into a geographical order—i.e., the cards are arranged in the same order in which the properties are located in each block of the city. For example, all of the cards for the properties in one block will be grouped together and arranged in lot order—1, 2, 3, etc. This makes it possible to appraise the properties in one block as a group.

Checking All Properties

All land in the municipality must be accounted for on the assessment records. This is done by checking the land descriptions on the appraisal cards against a map of the city. For example, accompanying a block having 10 lots and 10 owners, each owning one lot, there should be 10 appraisal cards. If there were only nine cards, then one lot would not be accounted for, and a blank card giving the legal description of the property would be inserted in the group to assure a card for each lot. In areas that have been recently subdivided but not mapped this checking will require the delineation of the new property lines. When this is completed, any land without an owner is very apparent. The ownership of the missing tracts is generally traced later.

The cards are now ready to be turned over to the measuring crews who will measure each building on the various properties. They also prepare scale drawings on the *appraisal card* of the more important buildings. These drawings show all of the dimensions of the building and delineate different elements of the building. For example, first and second stories are drawn separately, and open porches are sketched with a broken line, etc. In measuring residential properties, each crew consists of two men—one measures while the other draws. Commercial and industrial properties generally require three men.

The "Lister" at Work

When the measuring is completed the cards are turned over to a *lister* who makes a detailed inspection—both inside and out—of each property. The inspection, which is recorded on the appraisal card, covers features such as the foundation, siding, roof, floors, number of rooms, interior trim, plumbing, heating system, kitchen cabinets, etc.—in fact many of the same features that a prospective purchaser would look at. The lister next obtains from the owner all of the information that he can as to purchase price, date of purchase, and a list of all improvements and their cost from the date of purchase.

The lister is now prepared to grade the house for quality of construction using AAA, AA & A for above average construction, B for average, and C for below average construction. These gradings are sometimes modified by using plus or minus percentages. For example, a "B —10" rating would indicate that the property will be figured as a "B" grade and then reduced 10% for lack of quality. Finally, the lister estimates the depreciation the property has suffered and expresses his opinion as a percentage deduction.

Calculating the Value

The appraisal cards are now turned over to an office clerk who calculates the replacement value of each building (less depreciation) and the value of the land. Residential replacement value is based on standard square foot costs as listed in a *cost manual*. This manual gives the per square foot costs for six different grades of houses and for forty different square foot sizes in each grade. These costs are subject to modifications for variations from a hypothetical standard house. For example, the standard square foot costs include the cost of the heating system. The cost of any house being appraised that does not have this feature must be reduced by 43 cents per square foot if it is a one-story house, and by 67 cents per square foot if it is a two-story house. On the other hand, if the house being appraised has a superior heating system, then 29 cents per square foot would be added for a one-story house and 53 cents per square foot for a two-story house.

This is the first of two articles on assessment procedures by Mr. Cherney. The second, to appear in the forthcoming March issue, will discuss the use of sales-assessment ratios in measuring the uniformity of local assessments.

By adding and subtracting from the base cost, it is possible to arrive at a unit cost that fits the house being appraised. Once this cost has been determined, it is a simple matter to determine the replacement cost by multiplying the number of square feet in each part of the house by its cost factor. This replacement value is then reduced by a percentage to allow for the depreciation. These steps can be illustrated best by using an example:

HOUSE	
1,000 sq. ft. @ $12 per sq. ft. =	$12,000
200 sq. ft. @ 4 per sq. ft. =	800
Replacement Value	$12,800
Less: 5% for Depreciation	640
Sound Value	$12,160
Add: Lot Value	2,000
Total Value of the Property	$14,160

Commercial and industrial properties are calculated by using in-place costs. This is somewhat like the method used by contractors in making bids on a project. Using this method, the cost of each component part is estimated, and the total of all these parts equals the replacement costs. Thus any building or structure can be appraised regardless of its size, shape, or type of construction.

Land values are calculated in several different ways. Residential land values are derived by multiplying the number of front feet in a lot by a standard front foot value for the block in which the lot is located. Commercial land is similarly appraised, but in addition adjustments are made for corner and alley influences. Any of the lots that are appraised by the front foot method are adjusted for variations in depth by using depth tables that have been developed. Industrial land is appraised by either the front foot method, square foot values, or a per acre value. Farm land is appraised by using per acre value. Any of these values are subject to modifications that account for factors that influence its value.

Checking the Appraisal Values

Properties that have recent selling prices are used as bench-marks to test and check the appraisals. Since all value is derived from the real estate market, it is essential that the appraisals be kept in line with market values. This is done by computing the appraised value of properties with recent selling prices to see how closely the appraisals coincide with the market price. If the majority of such appraisals come close to the selling prices, it can be assumed that the appraisals are correct. By studying the grading and depreciation used on these bench-mark appraisals it is possible to estimate intelligently the

(Continued on page 201)

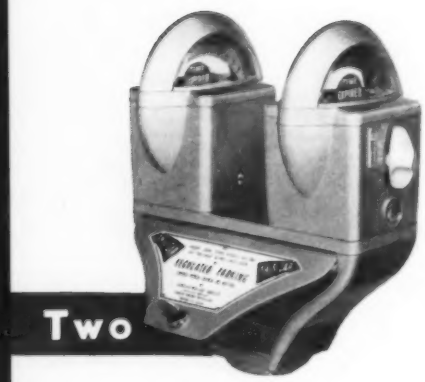
Let's face it . .

one way or another .

One

PARKING

VERTICAL---
HORIZONTAL---
ANGULAR---
TWO-WAY---
ONE-WAY---
DOUBLE---



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Exclusively DUNCAN, unparalleled DUPLEX flexibility provides the proper facing position for positive meter identification, regardless of the method of parking.

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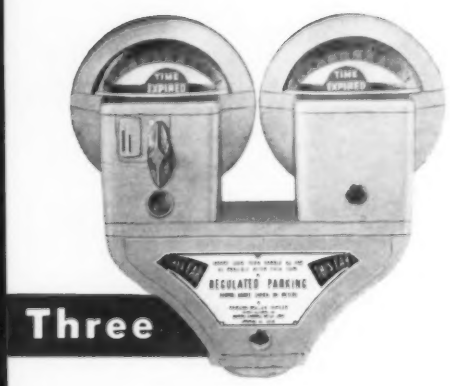
Utilizing the same high quality DUNCAN-MILLER Model "60" single unit mechanisms, interchangeability and maximum standardization are easily attained.

Let's face it . . . . . from every perspective . . . . . DUPLEX versatility will simplify your objective.



Three

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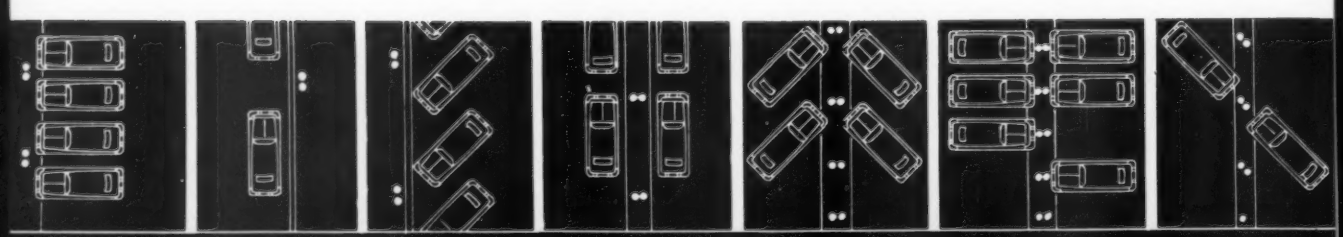
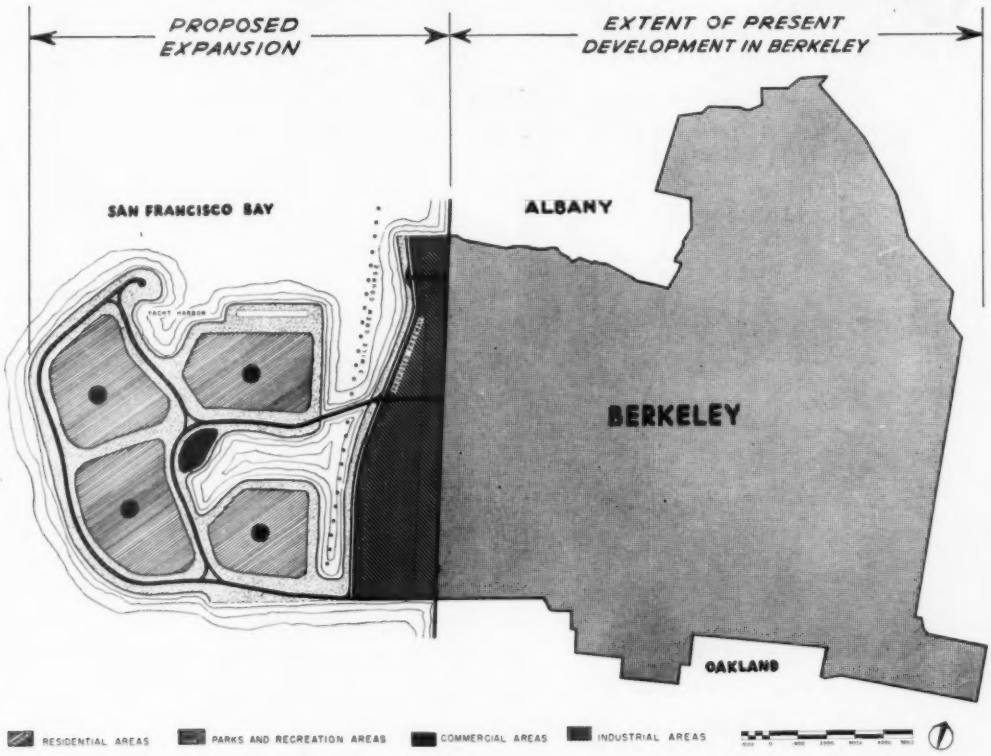
Manufacturers of fully automatic and manual parking meters.



Berkeley, Calif.
Plans Expansion into San Francisco Bay



THE city of Berkeley, Calif., has adopted a new master plan that foresees an eventual westward expansion of the city onto land to be reclaimed from San Francisco Bay. The new plan shows a possible development of approximately 2,000 acres that would be used for residential, industrial, and recreational purposes. The plan exploits the waterfront location of the new area by proposing extensive facilities for swimming, boating, and crew racing. The crew racing area would be particularly valuable to the University of California, which has its main campus in Berkeley.

Landlocked

The master report plan notes that Berkeley has often been described as a landlocked city because of its inability to expand in any direction on its landward sides. This is true because the northern and southern boundaries of the city abut on other heavily developed cities in the Bay area, while eastward development is blocked by a barrier of steep hills. Thus the only possibility of expansion lies to the west into San Francisco Bay where shallow water depths make it possible to reclaim submerged lands by filling. About 5,000 acres of underwater tide land is owned by the city by virtue of a special grant from the California Legislature in 1913.

Civic Group Makes Plan

The new plan is the result of deliberations by three Berkeley civic groups: a committee of the City Council, a committee of the Chamber of Commerce, and the City Planning Commission. The three groups envision the development of a complete new community on the reclaimed land rather than mere port and industrial facilities. Of the 2,000 acres that would be reclaimed, about 750 acres are proposed for residence, 500 acres for industry, and 450 acres for recreation. It is anticipated that the residential areas would consist of medium to high density dwelling structures with a fine hotel and a row of tall high-quality apartment houses occupying lands immediately adjacent to the waterfront drive to capitalize on a fine view of San Francisco and the Bay.

Industrial Development

The industrial area would be laid out in accordance with the best practices of industrial land planning to attract the highest class of development. A predominantly open building pattern to allow landscaping and off-street parking and loading would be encouraged. Careful standards for industrial operation would be adopted to prevent the establishment of plants which might produce objectionable odors, smoke, dust or noise. Attention would soon be given to securing industries that will employ a large proportion of skilled and technical workers. Such industries would strengthen Oakland's economic base.

POWERS American

Series 450 CONSTRUCTION AND OVERHEAD MAINTENANCE BODY

Does the Work of TWO TRUCKS

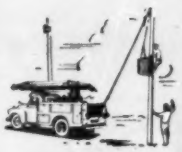
Here's a multi-purpose body that does work normally requiring two or more specially-equipped vehicles.

FOR OVERHEAD WORK . . . the body has a Powers-American mechanical or hydraulic Aerial Ladder, in a working height best suited to individual needs.

FOR SERVICE WORK . . . compartments provide space for the orderly storage of a wide assortment of tools and parts.

FOR CONSTRUCTION WORK . . . simplified, easy-to-use derrick handles poles up to 35 ft. in length. A 10,000 lb. underslung winch pays out cable beneath the body floor. A universal swivel sheave permits winch line pull in any direction, without limitation.

COMPLETE DESCRIPTION is given in Bulletin No. 118. A copy, with quotation, is yours for the asking.



Ladder can be revolved 360° at elevations from 30° to 75°. In 23'6", 26'6", and 30'6" mechanical units, or 35' hydraulic model.

Body is 108" long, for installation on dual-rear wheel chassis having cab-to-axle dimension of approximately 60"

Derrick utilizes flexible steel cable instead of conventional center leg. Stows in loading area rack when not in use.

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McCABE-POWERS AUTO BODY COMPANY
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Outdoor Lighting

Its economy for mercury vapor street lights on multiple circuits with

The Constant Wattage Ballast

What does a constant wattage ballast look like? Well here is one recently announced by the Line Material Company. It achieves regulation of output watts for a 400-watt mercury-vapor lamp within ±2%, even with line voltage variations as much as ±13%. The result is more uniform light output.

By HUBERT A. HENRY, *Road Design Division*
and
DALE D. MARVEL, *District 12*
Texas State Highway Department, Austin, Texas

THE recent introduction to Texas of a constant wattage ballast for use in multiple-circuit street-lighting systems has caused comparative studies of multiple and series circuits used in mercury vapor lighting projects to be made by the Texas Highway Department.

This new ballast proposes the advantages of an economical number of lamps on a low voltage multiple circuit between power sources, without the costly transformers, expensive wires, and hazards of the high voltage series circuit. In effect, it offers the usual installation and maintenance savings of the multiple system, without the cost of providing the additional power sources and transformer stations a conventional low voltage circuit would require. The use of the constant wattage ballast in the multiple circuit adjusts for variation in input voltage (100-130 volts or 200-260 volts) and gives constant lamp wattage and light output over these ranges. This allows more ballasts to be connected to the circuit without appreciably affecting light output or reliability of starting.

Chicago Park District Program Studied

In 1953 the authors were sent to Chicago to study equipment used in the Chicago Park District's new five-year multimillion-dollar street-lighting program. The purpose was to determine the advisability of using multiple circuit street-lighting systems with constant wattage ballasts. The Chicago Park district has used the constant wattage ballast extensively over a long period.

A system of mercury vapor lights was installed in the Chicago suburb of Cicero in 1949 using the multiple circuit and three different types of ballasts for comparison. Complete records were kept on each unit.

Based on this information, bids were received December 15, 1953, for the illumination of 4.2 miles of U. S. 75 in Galveston using the multiple circuit as an alternate to the series circuit. Plans and specifications were drawn for the series circuit as the regular bid, and another set of plans and specifications were made for the multiple circuit as an alternate bid. Both sets of plans provide for the same amount of lighting and were made in accordance with the American Standard Practice for Street and Highway Lighting.

Six contractors bid the job and all six bid the regular and alternate items. The total bid on the multiple circuit system was low in each case as compared with the contractor's total bid on the regular items, with an average difference of $25,788.70.

The contractor with the lowest bid of $168,730.49 on the multiple system, bid $25,537.95 higher on the series system. This difference can be accounted for in equipment and installation costs of the transformer stations ($16,692.21), type of wire used for cable ($8,370.74), and a very small difference in the total bid on the 345 assemblies ($475). An assembly includes pole, pole bases, arms, ballasts, and wire erected to form a complete and independent lighting unit.

Although the multiple circuit requires nine transformer stations and the series circuit only seven, the required equipment and installation costs made the series circuit bid higher on this item. The two additional stations for the multiple circuit required the use of more metal conduit, which reduced the net difference.

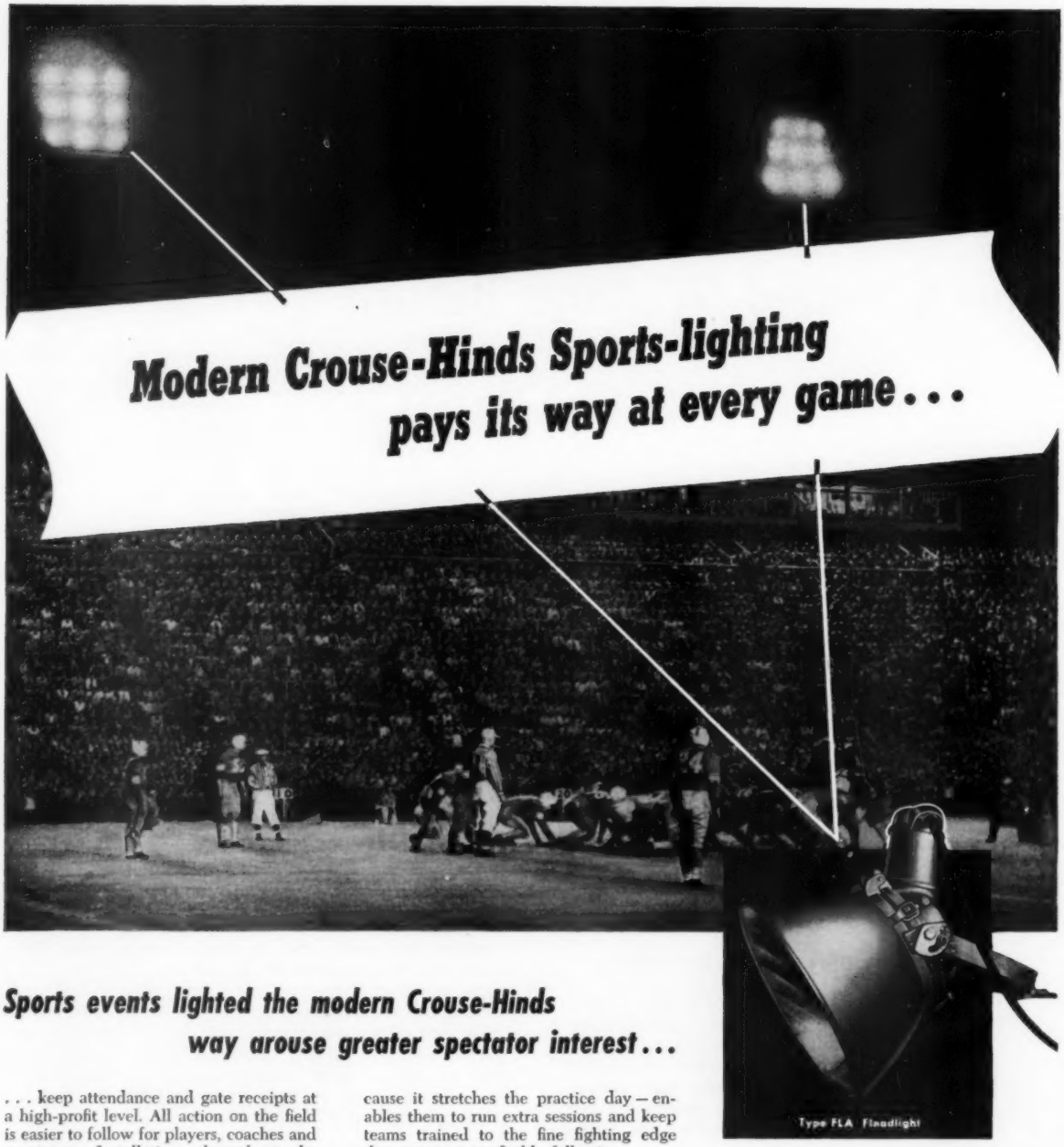
The remaining saving was made in the type of wire needed for a low voltage circuit as compared with the type needed for high voltages used in the series circuit, regardless of the fact that the multiple system called for about a third more wire.

EDITOR'S NOTE: This article was abstracted from material which appears in *Texas Highways* for March 1954.

Mercury Vapor Lamps Reviewed

REALLY good street lighting has always been an asset. Rising crime and accident rates have focused attention on the use of light as a deterrent.

Whether a town is considering new street lights for a growing residential district, making an existing system suitable for present-day traffic speeds and loads, or lighting a municipal parking lot, the mercury vapor lamp is sure to be studied. Two new pamphlets discuss mercury vapor street lighting and mercury vapor



Sports events lighted the modern Crouse-Hinds way arouse greater spectator interest . . .

. . . keep attendance and gate receipts at a high-profit level. All action on the field is easier to follow for players, coaches and spectators. Installations throughout the country prove conclusively that investments in Crouse-Hinds Sports-lighting provide an asset that can be written off the books in a single season.

Coaches are particularly happy about their Crouse-Hinds lighting system because it stretches the practice day — enables them to run extra sessions and keep teams trained to the fine fighting edge that assures a profitable following.

Administrators and city officials find Crouse-Hinds Sports-lighting permits full use of fields and stadia for school and civic functions as well as night sports of every type.

Your local electrical contractor is familiar with Crouse-Hinds Sports-lighting. Or our lighting engineers will gladly furnish free advice, tailored to your own requirements. Write today for the Crouse-Hinds Sports-lighting Bulletin containing standard layouts for every purpose.

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FLOODLIGHTS • CONDULETS • TRAFFIC SIGNALS • AIRPORT LIGHTING

lamps. Mercury vapor lamps set high standards. They can help make driving safer by producing better street and highway lighting to aid the driver's vision. Maintenance of light for the rated life of the lamps is excellent, better than 80%. Mercury vapor lamps provide a much longer burning life than do incandescent light bulbs. Because of their higher light output, fewer lamps are needed, fewer outlets, fewer fixtures, and lower cost of initial installation. Fewer fixtures and lamps mean lower cleaning and maintenance costs. Long-lasting lamps minimize replacement costs.

Mercury vapor lamps have replaced incandescents in hundreds of cities. A number of these installations are illustrated in a galley of photographs supplied by Sylvania, Holophane Co., Line Material Co., Wheeler Reflector Co., and Revere Electric Mfg. Co. The two booklets are available from Sylvania Electric Products Inc., 1740 Broadway, New York 19, N. Y.

Thoughts on Street Lighting

FOR traffic safety, street illumination should provide pleasant and accurate night-seeing conditions. Other values, of course are as factors in discouraging crime and in promoting business. Generally speaking, the levels of illumination acceptable for crime prevention are lower than those adequate for traffic purposes, while those employed for business attraction are higher.

In visibility there are four primary factors:

1. time available to perceive and recognize an object;
2. size of object to be seen, from a brick to a tractor-trailer;
3. contrasts between object and background;
4. level and conditions of illumination, which derive from
   (a) the level and uniformity of pavement brightness
   (b) the brightness of the object to be seen, and
   (c) the amount of glare to the observer.

These in turn depend on the source of illumination (location, design, and lumen output of the lighting fixture) and on the reflection factors and characteristics of the pavement and objects thereon.

Discerning an Obstacle

Three means of discernment are: *silhouette, reverse silhouette,* and *surface detail.* When the obstacle to be seen has a lower brightness than its background, it is most easily recognized because of the silhouette it casts. Under most street-lighting conditions, seeing by silhouette predominates. When the obstacle is brighter than its background, but surface detail is lost, it is seen by reverse silhouette. When the brightness of the object makes the surface detail visible, it is seen by surface detail.

While uniformity of pavement brightness is a desired objective in street and highway lighting, the level of brightness for a given traffic condition is modified by the amount of glare. If little or no glare is present, lower levels of brightness will suffice. Glare not only causes discomfort but reduces visibility.

The glare from luminaires may be controlled by (1) higher mounting; (2) shielding the light source, and (3) reducing the brightness contrast of the light source with that of the general level of illumination. The relationship of blinding effect and mounting heights is shown in the table below:

Mounting Height (feet)	Relative Blinding Effect
30	1
25	1.4
22.5	1.7
20	2.1
17.5	2.7
15	3.8
12.5	6.5
10	13.1

When the average foot-candle intensity (lumens per square foot) desired on the pavement is determined, a lighting system can readily be designated by use of a utilization-efficiency chart for a given luminaire design and output. The utilization chart derived from luminaire characteristics, illustrated in the following table, will vary for each luminaire design and is usually furnished by the manufacturer.

Current Recommended Average Horizontal Foot-Candles
(Lumens/Square Foot)

Pedestrian traffic	Vehicular traffic classification			
	Very light (under 150)	Light (150-500)	Medium (500-1,200)	Heavy to heaviest (1,200 up)
Heavy	*	0.8	1.0	1.2
Medium	*	0.6	0.8	1.0
Light or none†	0.2	0.4	0.6	0.8

* This condition is unusual, but if it should occur, the foot-candle figures appearing in the column to the right may be used.

† Lighted highways and expressways at grade should have illumination similar to that on urban streets with comparable traffic flow, either vehicular or pedestrian. An average of 0.6 ft-c is recommended for highways with full control of access as defined by the American Association of State Highway Officials, such as elevated or depressed expressways from which pedestrians are excluded. The values given for very light vehicular traffic pertain to roadways such as those in residential areas where vehicular speeds are low, of the order of 15 to 25 mph.

NOTE: The foot-candle values are based on a pavement having a reflectance of 10 per cent. When reflectance is poor (3 per cent), the average foot-candle level should be increased 50 per cent. When reflectance is unusually high (20 per cent or more), the recommended values may be decreased by 25 per cent.

Because of loss of lumen output due to dirt on glassware and reduction of lamp efficiency, the actual coefficient of utilization is reduced by a maintenance factor usually taken as 20%.

EDITOR'S NOTE: This article is abstracted from Chapter 22, entitled, "Road Lighting" in the new book *Traffic Engineering,* by Theodore M. Matson, Wilbur S. Smith and Frederick W. Hurd, Bureau of Highway Traffic, Yale University, New Haven, Conn. Published by the McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36, N. Y. (See Review on page 189 of this issue.)

Will 20 Times More Light Reduce Accidents Enough?

IN Amarillo, Texas, the lighting on a section of U. S. Highway 66 has been raised from 0.1 foot-candle to an average of 2 foot-candles. To achieve this increase in illumination, the Southwestern Public Service Company installed 163 lighting units in the dividing strip of a 3½-mile stretch of highway. The twin luminaires are 20,000 lumens each.

The lighting standards are Carco steel poles made

"but the light wasn't working!"

Maybe the poor chap was right! Failure of traffic signals—owing to faulty connections causes many accidents. Big danger spot—the terminal!

Be sure the terminals in your community's traffic-control system give maximum protection against human error and the strain of operating conditions.

PRE-INSULATED *Diamond Grip* TRADEMARK TERMINALS . . .

are precision-engineered for safety, dependability, tensile strength. They are vibration proof . . . won't be weakened by rumbling traffic . . . because they provide insulation support. PIDG are corrosion resistant . . . won't be damaged by exposure . . . because their copper is electro-tinned and pre-insulated.

Many traffic-control manufacturers are already using A-MP Pre-Insulated Diamond-Grips in their original equipment. You, too, can be sure of better, safer electrical connections by using A-MP terminals in maintaining this equipment.

An API field representative will be glad to show you how easy the terminals are to apply with A-MP Certi-Crimp tooling . . . and how little they cost. He can prepare a kit of terminals and connectors suited to your specific requirements . . . together with the proper crimping tools.

API branch offices stock popular A-MP terminals and tools for maintenance and repair purposes. Contact your local API office for a catalog.

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AMERICAN PAMCOR, INC.
A subsidiary of Aircraft-Marine Products, Inc.
181 Hillcrest Ave., Havertown, Pa.

Outdoor Lighting

by Pacific Car and Foundry Company with double 6-foot brackets, fitted with luminaires manufactured by the General Electric Company. They are top-mounted for single-tank twin-lamp ballast (Line Material Co.) and for double feeder arms.

The new illumination is expected to reduce the traffic-accident rate on this major roadway. According

Twin luminaires with mercury vapor lamps of 20,000 lumens each provide 2.0 foot-candles along U. S. 66 in Amarillo.

to C. Harold Miller, Amarillo traffic engineer, 333 accidents occurred on this street in the year prior to the building of the new six-lane highway. The year following the opening of the new highway showed 289 accidents for a decrease of 13%. Meanwhile, average vehicular traffic speeds increased from 31 mph to 38 mph. Traffic volume increased from 8,561 vehicles per day to an "after" figure of 19,322 vehicles per day at the same location. The new lighting was in operation during the last four months of this period.

The equipment was purchased and installed by the Southwestern Public Service Company with the cooperation of W. S. Kingsolver, lighting engineer for the Line Material Company of Dallas.

* * *

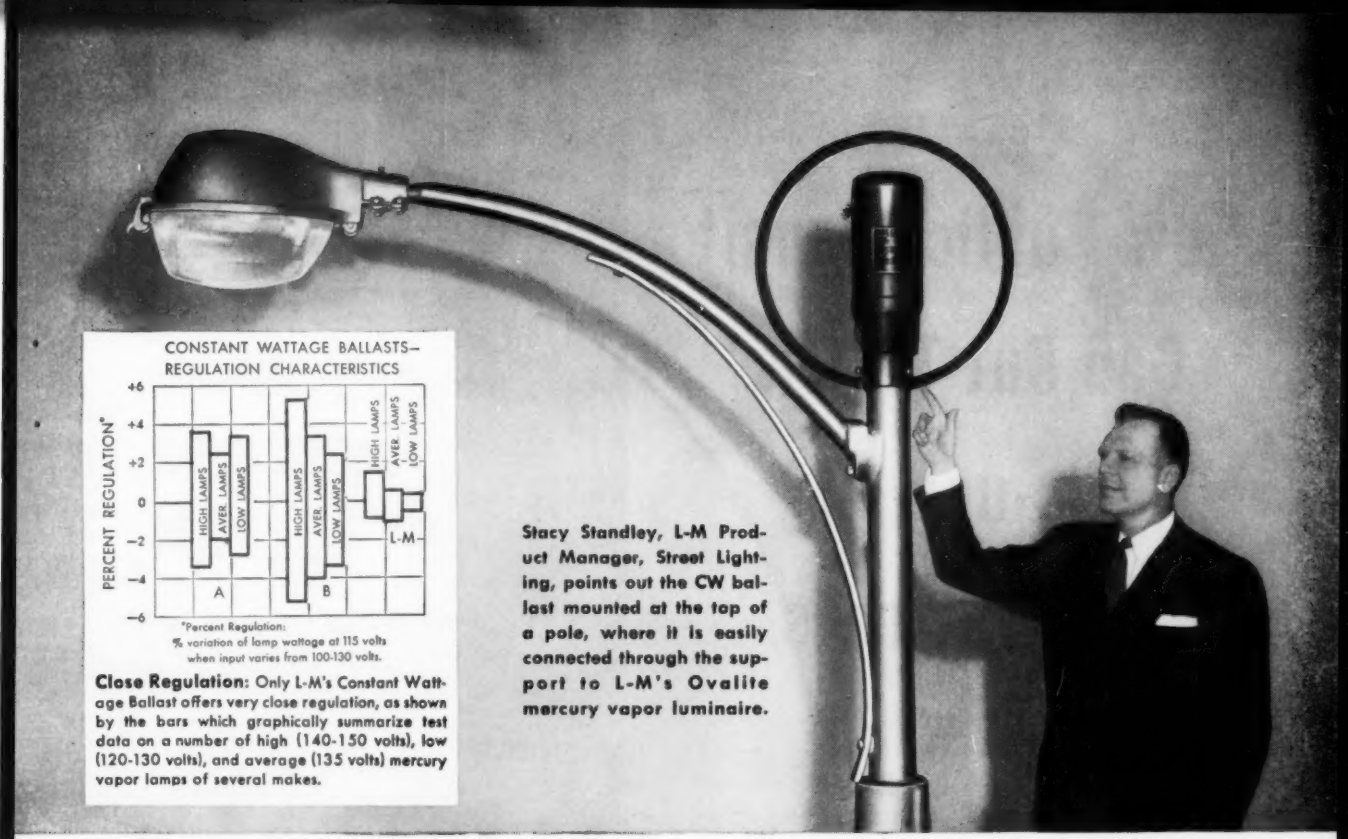
NEARLY three miles of continuous fluorescent lighting will be installed in the third tube of the Lincoln Tunnel, according to the New York Port Authority. When completed in 1957, the latest Hudson River tube will increase the annual capacity of the Lincoln Tunnel by 50%.

* * *

POPULAR SUBSCRIPTION raised $30,000 and the City of Corona, Calif., contributed a like amount to complete a new street-lighting project. A door-to-door drive sparked by City Councilman Herbert E. Garton, sold the benefits of adequate street lighting—how it saves lives and builds business. Pacific Union Metal's Marbelite poles were chosen for the job. The 30-foot concrete standards equipped with 8-foot bracket arms are spaced 120 feet apart, staggered. Three new units in each block replace six of the former upright fixtures.

* * *

SOUTH CENTRAL AVENUE in South Phoenix, Ariz., has been lighted by 106 mercury-vapor units of 20,000-lumens. Spacing is 130 feet.

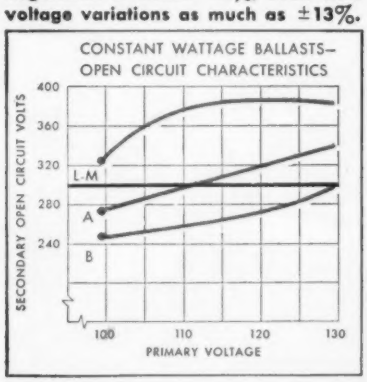


Close Regulation: Only L-M's Constant Wattage Ballast offers very close regulation, as shown by the bars which graphically summarize test data on a number of high (140-150 volts), low (120-130 volts), and average (135 volts) mercury vapor lamps of several makes.

Stacy Standley, L-M Product Manager, Street Lighting, points out the CW ballast mounted at the top of a pole, where it is easily connected through the support to L-M's Ovalite mercury vapor luminaire.

CW Ballast Assures Uniform Light Output . . . Outstanding Below-Zero F. Starting

L-M's new Constant Wattage (CW) Ballast assures more uniform individual light output for mercury vapor systems than do other mercury vapor ballasts. Regulation is within ±2%, even with voltage variations as much as ±13%.



Cold-Weather Starting: Heavy line shows the average voltage required to start mercury vapor lamps at −10 degrees F. L-M's CW is the only ballast providing this secondary voltage when primary voltage drops below 115.

"CW" and "Ovalite" are Line Material Company trademarks.

According to published data, at least 300 volts are required to start 95% of H-400 E-1 lamps at 10 degrees below zero, Fahrenheit. In tests (see curves at left) with two other constant wattage ballasts of approximative design, the L-M CW maintains the highest open-circuit voltage, and is the only one that maintains over 300 volts at primary voltages below 115. Therefore it will start lamps at temperatures well below zero.

According to L. F. Joy, Electrical Superintendent of the city of Fairbanks, Alaska, L-M ballasts gave no trouble whatever; and, Mr. Joy adds, no trouble was experienced in starting even at 50 degrees below zero.

From its own laboratory and field tests on the CW ballast, a large utility concluded;

1. "This ballast operates at normal current in locations where tanks on other ballasts have burst previously." (This is believed to have been caused by the greatly increased flow of harmonic current into the ballasts.)

2. "The ballast will enable lamps to provide constant light output over a wide range of supply voltage."

3. "The ballast will not cause undue lamp burnouts due to high wattage, since it allows even 140-150 volt lamps to draw little more than 400 watts."

4. "The ballast will not burn out as a consequence of lamp burnouts, since its open-circuit current is low."

5. "The ballast will start lamps at extremes of low temperature."

Other Advantages of the CW

Primary volt-amperes of the L-M CW are very uniform, compared to much wider fluctuations of other ballasts. Split primary winding permits connecting the CW to either 100-130 or 200-260 volts. Since the same CW ballast may be used for pole base, pole top or aerial applications, you stock only one ballast.

Isolated secondary winding permits grounding the secondary when desired.

Added features are that the L-M CW is galvanized, then painted. It has a watertight, moisture-proof seal. Neoprene-covered leads are brought out through tightly fitting neoprene plugs. The CW is 1 to 2 pounds lighter than other ballasts.

Get Complete Information

L-M makes a full line of incandescent, mercury vapor, and fluorescent luminaires, and offers you the benefits of its well-known Application Engineering Service. Ask the L-M Field Engineer for bulletins and information. Or write Line Material Co., Milwaukee 1, Wis. (a McGraw Electric Company Division).

LINE MATERIAL *Street Lighting* 230

How Public Transit Can Cut Traffic Tie-ups on Your Streets

Streets jammed with traffic soon stagnate the areas they serve. Without a free flow of people and goods, tax values decline, established businesses lose revenue and new businesses are diverted to other areas.

You can help solve the traffic problem in your city by giving your support to a fast, modern transit system.

This means encouraging people to use public transit by making it as fast and convenient as the private automobile. To gain a speed advantage, for example, we must provide exclusive lanes for transit vehicles and eliminate downtown curb parking. And for more convenience, transit should be co-ordinated with the automobile by providing outlying parking areas adjacent to transit lines.

Fast, convenient mass transportation is needed to attract riders and relieve traffic congestion.

Find out how you can help your transit system work to best advantage for your city. Write Section 107-29, General Electric Co., Locomotive & Car Equipment Dept., Erie, Pa., for illustrated brochures.

Progress Is Our Most Important Product

GENERAL ELECTRIC

TRAFFIC TIE-UPS ARE EXPENSIVE because they discourage people from shopping and conducting business in your city. People detest time consuming, frustrating traffic snarls. As a result—your city suffers.

MOVING PEOPLE WITH MODERN TRANSIT can increase business in your community because riders get fast, convenient service. When streets are clear, people and goods move freely, and your city prospers.

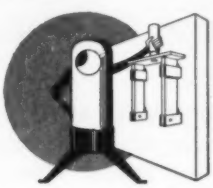
CONTROLLING STREET LIGHTS IN PROVIDENCE, R. I.

Motorists and pedestrians in Providence can thank their City Government for authorizing The Narragansett Electric Company to install dependable, automatically controlled street illumination.

The use of Fisher-Pierce street lighting controls assures dependable *automatic* illumination of streets the moment daylight drops below a safe value. Because F-P controls are photoelectric, they operate regardless of the hour, the season or the weather.

On the job in Providence since 1946, F-P controls now number about 3000. Narragansett engineers report favorable installation economics *and* an extremely low failure rate — only 2.29% of *all* units during a recent 12-month period.

Long, dependable service of F-P controls — in street lighting control systems in Providence and hundreds of *other* communities — is the basic reason Fisher-Pierce is recognized as a *leader* in its field.



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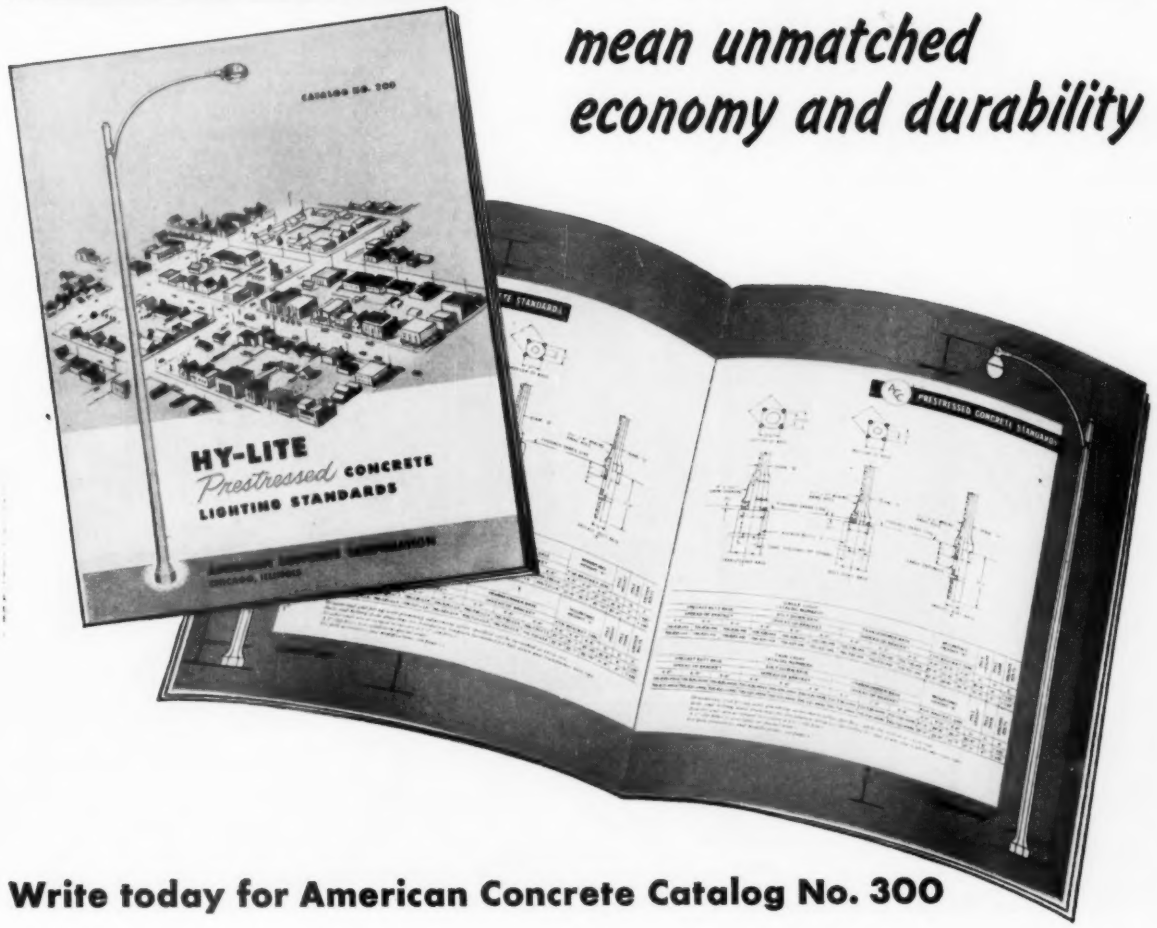

Write today for American Concrete Catalog No. 300

IF you are responsible for planning, specifying or purchasing street lighting standards . . . you will want a copy of American Concrete Corporation's helpful Catalog No. 300 on Hy-Lite Prestressed Concrete Lighting Standards.

This new 24-page booklet gives you complete information on attractive Hy-Lite designs, foundation and mounting arrangements, engineering data, specifications, dimensions, and details on today's greatest advancement in reinforced concrete construction . . . *prestressing.*

In this catalog you will also find a photo-story on the making of Hy-Lites, as well as numerous pictures of typical Hy-Lite installations. Four pages are devoted to a complete description of upright standards for special lighting applications.

To get your free copy, simply fill-in and mail the handy coupon, or write to The American Concrete Corporation, 5092 North Kimberly Avenue, Chicago 30, Illinois.

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Please send me Catalog No. 300 on Hy-Lite Prestressed Concrete Lighting Standards.

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HARTFORD PRACTICES WHAT IT PREACHES . . . As the Nation's insurance capital, Hartford, Connecticut, preaches life and accident protection . . . and practices it in one of the best ways *any* city can—with modern street lighting, using Monotube poles.

Does the policy pay? Here's proof. In a downtown area, as part of a well planned program, old-style upright standards were replaced recently by 687 trim Monotube poles with modern upsweep brackets mounting 20,000 lumen mercury vapor units. This gave more uniform light, *five and one-half times brighter*, and in one year night accidents were reduced 34 per cent! In this one area the annual accident cost saving is estimated at $38,627— *in accidents that didn't happen!*

For economy and maximum efficiency it will pay you to include Monotube poles in future lighting plans. For complete catalog information write to The Union Metal Manufacturing Company, Canton 5, Ohio.

1906 *Fiftieth Anniversary* 1956

UNION METAL

Monotube Lighting Poles

At night, the lighting level on Broadway, Wisconsin Dells' main street, is soft and white. How Broadway's fluorescent units look in the daytime can be seen in the photo at the left.

Wisconsin Dells Preening

Improvements ready small resort city for forthcoming centennial

HAVE you heard of the Dells of Wisconsin? Vacationers who visit them say that few spots in America offer as much fun and beauty. The summer's gaiety will be even greater when the City of Wisconsin Dells, heart of the "Dells" region, observes its centennial.

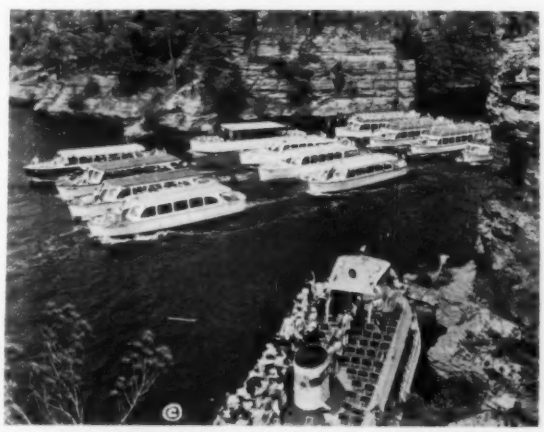
Street Improvement

A large section of the main street has been widened to 68 feet and repaved with concrete. Road crews are widening the remainder of the main street to a junction of U. S. Highway 16 and 13 at the east end of the city. Once completed, the new improvement will permit two-lane traffic in each direction with ample room for parking on both sides of the street.

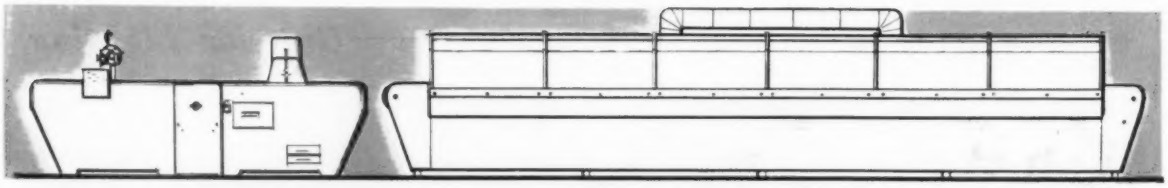
Lighting Improvement

This street is being relighted with 51 fluorescent luminaires furnished by Line Material Company. The new lighting system now consists of 20 four-lamp luminaires. Rated 515 watts, the luminaire can accommodate four 100-watt, 6-foot lamps. Each lamp has an initial output of 5,350 lumens. The Wisconsin Dells Water and Light Commission mounted each unit on a steel pole about 27 feet high and tilted it 20 degrees from horizontal. Poles are spaced 50 feet apart and are arranged in staggered fashion.

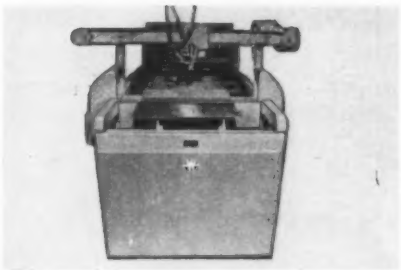
The populace of Wisconsin Dells will have much to enjoy and much to be proud of, come centennial time—and thereafter.



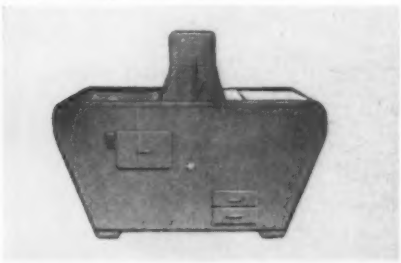
The Upper Dells Fleet on Review, Wisconsin Dells, Wis. **A fleet of modern boats offer visitors a thrilling 15-mile cruise through the grandeur of the Upper and Lower Dells.**



AUTOMATION comes to TRAFFIC SIGNS!



THE WALD AUTOSPRAY . . . *applies a uniform film of paint on the sign surface. All types and consistencies of sign coating materials can be used.*



THE WALD AUTOREFLECTOR . . . *deposits glass spheres with metered accuracy onto the previously sprayed binder.*

THE WALD AUTOBAKE . . . *seasons and bakes the sign from the inside out. Independent heat zones insure perfect control of the baking process.*

NEW WALD AUTOMATIC SIGN SHOP

Greater Uniformity, Faster Production, Lower Cost

. . . These three benefits that automation is bringing to many industrial products can now be realized on your traffic signs.

The Wald Automatic Sign Shop outmodes all previous methods of preparing sign blanks for the printed message. Your signs move through the various mechanical operations smoothly and quickly on a production line that delivers the last sign just as uniformly perfect as the first. Three sectional units make up the Wald Automatic Sign Shop—the Autospray, the Autoreflector and the Autobake. Each unit may be purchased separately or in any combination desired.

For full information write:

WALD INDUSTRIES
INCORPORATED
Huntingdon, Pennsylvania

To Reduce Congestion

AMERICAN CITIES ARE BEING SLOWLY STRANGLED BY TRAFFIC CONGESTION, states a new bulletin entitled "Rapid Transit Cure for Congestion."

For most cities this grim death is not inevitable. As present unparalleled prosperity rests largely on record purchasing of automobiles, reduction of the number of cars on the streets is not only unlikely but would be deplored.

Quite a few traffic authorities have discovered some facts leading to an organization of traffic flow, parking and city transportation. In Kansas City, Mo., for instance, it has been found that 40% of the cars in the business district are through-traffic cars that don't want to be there. These will be deflected by a ring highway close in around the business district.

A major generator of congestion is commuters' cars that come in the morning and leave late in the afternoon. They park in the business district and are the cause of the familiar traffic peaks. In a number of cities where the ring highway is understood, parking spaces for long-time parkers are being provided along this ring and tied together by it.

In towns and smaller cities the ring highway and its parking fields can usually be located so close to the business district that walking to work from the parked car is entirely feasible. Often in the larger cities the ring highway will be far enough out—8, 10, 15 blocks—to necessitate service by city transportation.

This is not only a logical plan for controlling traffic and parkers, it is the plan.*

The Kansas City program appears to envision the complete problem: through traffic, parking and mass transportation. Many cities take a stab at one or another of these elements, sometimes aggrevating the problem. That this is so is suggested by the booklet "Rapid Transit Cure for Congestion," which is abstracted on this and the following page.

*A more detailed statement of the plan will be found in the following issues of The American City, April 1953, pp. 94-96; June 1953, pp. 106-107; and in The Municipal Index for 1953 and 1954, pp. 914-917, 947-950, respectively.

Fast Transit—

the magnet for shoppers and workers

THERE isn't a single city of any size in the United States that even claims to have solved the automobile parking problem, according to the General Electric booklet "Rapid Transit Cure For Congestion."*

This is true because 30% of our traffic (expressed in vehicle miles) is found on city streets, and you can see why our downtown areas cannot solve the parking problem. The American Society of Civil Engineers calls it "a malady menacing the cores of American cities, threatening the whole urban organism and causing an economic loss of $2 billion a year."

People coming into a business district can be divided into four groups:

People to whom autos are a necessity, like doctors, traveling salesmen, service technicians, and drivers of trucks, ambulances, and similar vehicles, who will always require street space and therefore cannot be converted to riding the transit system, no matter how attractive we make it.

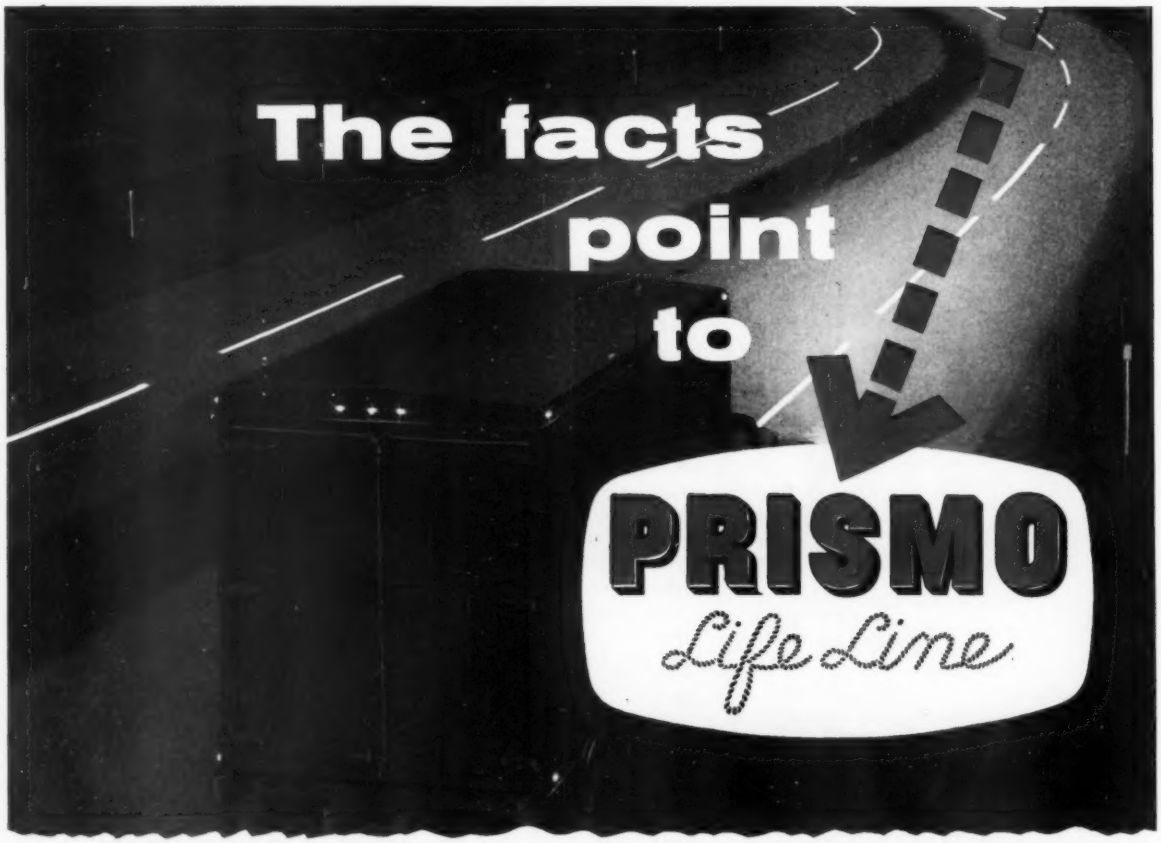
Workers and shoppers who through habit prefer to drive their automobiles. They do not need their cars during the time that they remain in the business district, but they do need a place to park. Obviously, they should be considered potential customers of the transit system, but we must remember that these people *prefer* to drive. This preference is probably due to many things, but one of the major reasons seems to be that they are not satisfied with the service that the transit system is offering its riders.

City folk who have no other way to travel except by public transit. If transit doesn't give them the service they want, they will find other means of transportation. This would add to our problem instead of helping to solve it.

Shoppers and workers who have found that public transit is best for most of their trips comprise the fourth group. Why this group must be enlarged if we are to solve the problem of congestion in large cities is shown by the chart headed, "The capacity of a single traffic lane per hour is:"

The constructive aim is to move *people*. Public transit moves the most people. Contrary to popular opinion, rapid transit does not mean one particular type of vehicle. The real point is not what vehicle is used to

* This booklet is available free of charge from the General Electric Company, Apparatus Sales Div., Schenectady 5, N. Y.



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PRISMO '200' Hi-REFLECTIVE FINISH

Here's the all-in-one reflective finish developed to brilliantly answer every reflective sign requirement. Complete angularity, with the highest refractive index ever attained —Prismo '200' is the last word in reflectivity . . . the first to be seen and *read* on a darkened highway.

1. IT'S A FACT — Prismo LifeLine has sure-fire brilliance of unvarying intensity.

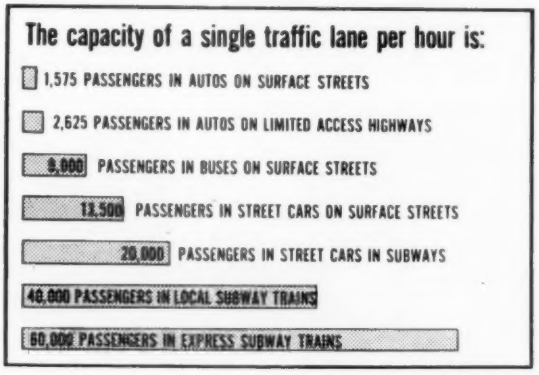
2. IT'S A FACT — Prismo LifeLine has standout all-weather visibility — shines through sheets of rain — through mists, smog and fog.

3. IT'S A FACT — Prismo LifeLine is absolutely impermeable to water — highly resistant to the corrosive action condensations from exhaust fumes and gasoline.

4. IT'S A FACT — Prismo LifeLine is practically indestructible — takes a beating from heavy-unit and stop-and-go traffic — withstands abrasion from tire chains.

Low-cost, trouble-free, reliable protection for highway and in-town traffic is yours with Prismo LifeLine®. Investigate. Our illustrated catalog No. 354 gives complete data. Your copy will be sent immediately upon request.

PRISMO
SAFETY CORPORATION
Huntingdon, Pennsylvania


The capacity of a single traffic lane per hour is:
1,575 PASSENGERS IN AUTOS ON SURFACE STREETS
2,625 PASSENGERS IN AUTOS ON LIMITED ACCESS HIGHWAYS
9,000 PASSENGERS IN BUSES ON SURFACE STREETS
13,500 PASSENGERS IN STREET CARS ON SURFACE STREETS
20,000 PASSENGERS IN STREET CARS IN SUBWAYS
48,000 PASSENGERS IN LOCAL SUBWAY TRAINS
60,000 PASSENGERS IN EXPRESS SUBWAY TRAINS

move people, but how fast the vehicle can move.

Rapid transit has three distinguishing characteristics.

The separate right-of-way is the most important element of a rapid transit system. It keeps it out of the traffic stream. Riders are attracted to such a system because they know that they'll get to their destination quickly and conveniently.

Obviously we can't make the transit system rapid if the vehicles stop every block to pick up and discharge passengers. The second important feature of rapid transit then, is to space stops far enough apart to permit reasonable speeds and to provide comfortable passenger stations for riders.

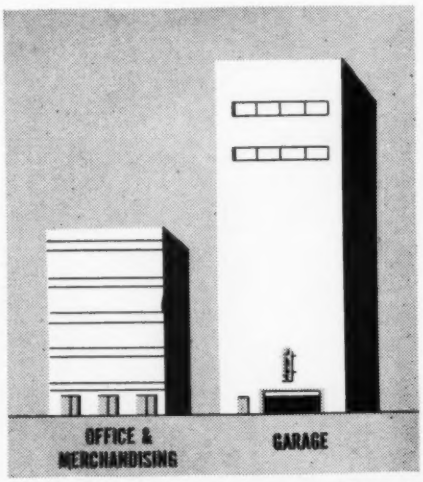
Outlying Parking Facilities

Don't forget the automobile. If we ever hope to change drivers' habits so that they become transit riders, we must provide them with a place to park along the transit route. Parking space is usually much less expensive at outlying points than it would be in the center of the city. This fact, plus the obvious reduction of traffic congestion within the city, points to the reason why outlying parking facilities are a "must" for *rapid* transit.

Expressways and rapid transit can work together.

Four ways to give transit room to move are:

1. Subways to provide for high-speed, mass movement of people. The cost of construction is high, but sometimes there is no better way to provide a transit right-of-way.
2. Transit tracks that are raised above the traffic stream are another way to provide fast transportation. The use of such structures has declined in recent years.
3. Use existing railroad tracks, one of the least expensive methods of obtaining transit rights-of-way.
4. Transit tracks on the center mall of an expressway. These permit those who drive and those who ride to get to their destinations quickly on separate rights-of-way. An adequate center mall included in the planning stage of a new expressway provides the rapid transit right-of-way for about 1/50 the cost of constructing a subway.



Approximately 2 square feet of automobile parking area is required for each square foot of business floor area, if all workers and customers traveled via private automobile. The illustration shows garage space required if workers and customers in nearby offices and merchandising building traveled by private automobile.

Good Timing Reduces Congestion

A FAMOUS intersection in Brooklyn, N. Y., where three principal thoroughfares, Flatbush, Atlantic and Fourth Avenues meet adjacent to the Long Island Railroad Station and two subway stations, creates a 75,000 vehicle-per-day traffic headache.

Medicine prescribed by our Deputy Commissioner Dwight T. Myers of the Traffic Department included the elimination of a complex "detour" and a complete change in the timing of the traffic signals. The new signal timing reduces the exasperating delays caused by the long red periods of a 120-second cycle. The idea is to prevent clogging of the intersections caused by back-ups of traffic held up by the long red periods at other points in the triangular intersection.

Minor therapeutic measures include prohibition of left turns and painting crosswalks in new locations. Cable barriers will be erected to prevent pedestrians crossing at exceptionally hazardous locations. The old traffic signals have been replaced by new three-level, three-color signals in better locations.

T. T. WILEY, *Commissioner of Traffic*
New York, N. Y.

* * *

THE New York City Police Department employs 777 school-crossing guards and will appoint 700 more who will bring the strength to 1,477. The goal is 1,500 guards to assist in covering the city's 2,300 school crossings. Persons who apply must be citizens between 25 and 50 years of age, not less than 5 feet 2 inches in height, grammar school graduates, and residents of New York City for the last three years.

The hours are one hour in the morning, two hours at noon and one hour at the close of school. The rate is $1.50 an hour, or $5 to $6 a day.

Allis-Chalmers

model D

THE LOW-COST MOTOR GRADER THAT OFFERS

more of everything...

more PRODUCTION-BOOSTING FEATURES

Choice of Allis-Chalmers engines

GASOLINE — 50 brake hp. Bare grader weight —8,800 lb. Four forward speeds to 25.6 mph, one reverse to 3.3 mph.

DIESEL — 50 brake hp. Bare grader weight — 9,350 lb. Four forward speeds to 25.2 mph, one reverse to 3.2 mph.

ROLL-AWAY moldboard rolls the load instead of pushing it, moves more dirt, uses less power.

Plus one-piece tubular frame, tandem drive, real operator comfort, hydraulic blade lift.

USEFUL OPTIONAL FEATURES

Power circle turn for faster, easier, better control of blade . . . turns 135 degrees.

Leaning front wheels with heavy-duty axle, for better control in close quarter-work.

Hydraulically shiftable moldboard to speed work around obstructions. Shifts 16 in. each way.

Special large tires for added traction, long wear. Front (7.50-20 or 8.25-20) and rear (8.25-20).

more JOB-MULTIPLYING ATTACHMENTS

Hydraulic scarifier, mounted amidships for maximum effective ground pressure.

Shoulder maintainer for safe, one-pass operation. Also available: one-pass windrow eliminator.

Rear-mounted 5/8-yd loader for fast, low-cost handling of materials.

plus snowplows, completely enclosed standup cab, hydraulically operated mower.

more SATISFIED USERS

Since its introduction in 1949, thousands of satisfied owners have *proved* the usefulness and low-cost versatility of the Model D on all kinds of construction and maintenance.

Call your Allis-Chalmers Construction Machinery Dealer for a demonstration today!

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ALLIS-CHALMERS

ROLL-AWAY is an Allis-Chalmers trademark.

Pros and Cons of Night Parking

SEVERAL years ago, the city of Milwaukee adopted an ordinance which prohibited all-night parking of vehicles in streets. In some sections of the city, however, the off-street parking situation was so acute that it was impossible for motorists to comply with this ordinance. Consequently, the Police Department was besieged with telephone calls each day from people who could not find off-street parking space asking permission to park their cars on the street, which in deserving cases was granted. The calls clogged the Police Department telephone lines and it was difficult to get urgent messages through to police headquarters, and something had to be done in order to alleviate this annoying situation.

As a result of this, says Henry J. Wantoch, Traffic Control Engineer, the city of Milwaukee inaugurated a permit system in 1950 which provided all-night parking on residential streets for a fee of $4 per month. The permits as issued provide for parking on the even side of the street on even numbered days, and for parking on the odd side of the street on odd numbered days. Over 8,000 all-night parking permits per month are now issued under this program.

All the money received from the permit fees, now over $400,000 per year, is used for the purchase and development of off-street parking lots in residential areas. There are four such lots, and they have made it possible for the city to start a program of relieving all-day employee parking problems. These lots are usually located in residential areas where there is very little demand for short-time parking. However, they are located within reasonable walking distance to business and industrial areas, and, therefore, provide parking spaces during the daytime for all-day parkers.

In 50 Other Cities

The accompanying tabulation of data from 50 cities with a population range of 100,000 to 300,000 was compiled by the Waterbury (Conn.) Taxpayers' Association, Inc., in September 1955. Of these cities, 33, or 66%, reported some sort of ban on all-night parking. Of the 17 cities reporting no ban, two of them—Flint, Mich., and Wilmington, Del.—formerly had all-night parking bans which have since been repealed. Wichita, Kans., now without a ban, is considering the adoption of one on "an alternate side of the street basis to facilitate street cleaning in multifamily areas."

Cities having all-night parking bans in effect longest are mainly located in New England. Hartford's ban is the oldest, going back to the year 1920. New Haven adopted a ban sometime soon thereafter. Bridgeport and Providence have had all-night parking bans since about 1925, as has Spokane, Wash.; Dayton has had one since 1926; Pasadena since 1927; and Kansas City since 1931. Cities which have adopted all-night parking bans since 1950 include: Camden, Duluth, Peoria, Salt Lake City, South Bend, Worcester, and Youngstown. A typical ordinance is that of Springfield (Mass.) which states:

> **It shall be unlawful for the driver of any vehicle, other than one acting in an emergency, to park said vehicle on any street for a period of time longer than one hour between the hours of two ante meridian and six ante meridian of any day.**

Ban in Winter Only

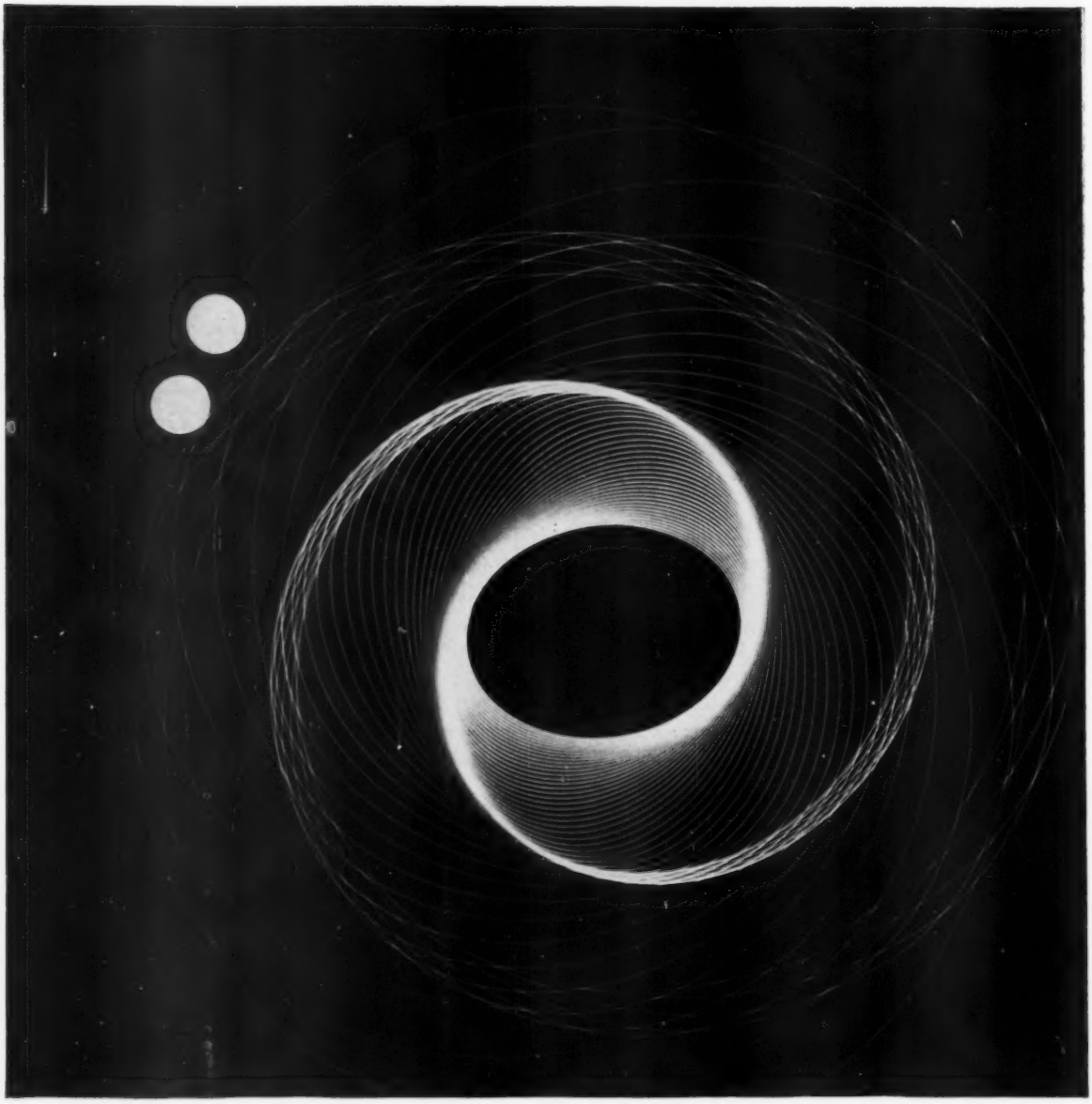
Several cities report their all-night parking ban in effect during the winter months only for the purpose of facilitating snow removal operations. These include Duluth, Fall River, and Worcester. Syracuse's ban is in effect all year but covers a longer period during the winter months.

Other cities either restrict their ban to the central business district or concentrate their enforcement of it in that area and along major thoroughfares and bus

REGULATION OF ALL-NIGHT PARKING IN 50 CITIES

CITY AND STATE	EST. POP.	AREA SQ. MI.	IS ALL-NIGHT PARKING ILLEGAL?	ENFORCED?	PARKING LIMITS
Albany, N. Y.	135,000	–	YES	In new residential areas	No parking : 3-6 a.m.
Allentown, Pa.	106,756	17	NO	—	— : —
Austin, Texas	180,000	52	YES	NO	— : —
Berkeley, Cal.	115,000	9.3	YES, for heavy duty commercial vehicles	YES	1 hr. : 2-6 a.m.
Bridgeport, Conn.	175,000	18	YES	YES	3 hrs. : 11 p.m.-7 a.m.
Camden, N. J.	124,555	9.5	YES	YES	— : —
Charlotte, N. C.	150,000	32	YES	Not rigidly	1 hr. : 12-7 a.m.
Dayton, Ohio	*280,000	29.4	YES	Against trucks	4 hrs. : 10 p.m.-6 a.m.
Des Moines, Iowa	184,032	56.4	NO	—	— : —
Duluth, Minn.	104,511	62	YES, from Nov. 15th to April 1st	YES, additional help needed	— : —
El Paso, Texas	185,000	102	YES, in central business district	—	— : —
Erie, Pa.	140,000	7.5	NO	—	— : —
Evansville, Ind.	135,000	–	YES	NO	30 min. : 2-5 a.m.
Fall River, Mass.	112,000	41	YES, from Dec. 15 to Mar. 31 on certain arteries and bus routes	YES	— : 12-6 a.m.
Flint, Mich.	200,000	30	NO, ordinance removed in 1949	—	— : —
Fort Wayne, Ind.	143,000	32	YES, "in downtown sections"	YES	— : 2-6 a.m.
Gary, Ind.	150,000	42	YES	Parking permitted on one side of street	1 hr. : 2-5 a.m.
Grand Rapids, Mich.	193,000	23	YES	—	1 hr. : 1:30-6 a.m.
Hartford, Conn.	180,000	18.6	YES	YES	— : 12-6 a.m.
Kansas City, Kan.	129,000	–	YES	NO	30 min. : 2-6 a.m.
Knoxville, Tenn.	124,769	26.4	NO	—	— : —
Little Rock, Ark.	107,331	26	YES	NO	30 min. : 2-6 a.m.
Miami, Fla.	*303,387	34.2	YES	When traffic requires	6 hrs. : anytime
Mobile, Ala.	131,000	26	NO	—	— : —
Montgomery, Ala.	106,000	26	NO	—	— : —
Nashville, Tenn.	175,000	22.5	NO	—	— : —
New Haven, Conn.	165,600	22.4	YES	NO	2 hrs. : anytime
Norfolk, Va.	*290,241	48.4	NO	—	— : —
Pasadena, Cal.	110,484	22	YES	YES	No parking : 2-6 a.m.
Patterson, N. J.	140,000	8	NO	—	— : —
Peoria, Ill.	115,000	14	YES	YES, on complaint basis in residential areas	30 min. : 2-6 a.m.
Providence, R. I.	248,674	18.9	YES	YES	2 hrs. : 1-7 a.m.
Reading, Pa.	110,000	–	YES	NO	— : —
Richmond, Va.	240,000	30.9	NO	—	— : —
Sacramento, Cal.	160,000	–	NO	—	— : —
Salt Lake City, Utah	182,000	–	YES	On complaint basis and during periodic checkup	1 hr. : 2-5 a.m.
Scranton, Pa.	125,000	19.5	YES, in accordance with State Law which prohibits night parking without proper lighting	YES	— : —
Shreveport, La.	155,000	26.2	NO	—	— : —
South Bend, Ia.	150,000	–	YES, on alternate sides of designated streets	Strictly, in downtown area	No Parking: Oct. - April : 2-5 a.m. May - Sept. : 1-6 a.m.
Spokane, Wash.	182,000	41.9	YES	NO	5 hrs. : anytime
Springfield, Mass.	170,000	32	YES	YES	1 hr. : 2-6 a.m.
Syracuse, N. Y.	230,000	25	YES, with parking permitted on alternate sides of streets	YES	Nov. - April : 1-7 a.m. April - Nov. : 2-5 a.m.
Tampa, Fla.	223,000	69	YES, in downtown business area	YES	1 hr. : 1-6 a.m.
Trenton, N. J.	130,000	7.5	NO	—	— : —
Tulsa, Okla.	240,000	37.1	NO	—	— : —
Utica, N. Y.	101,479	16.5	YES	YES	30 min. : 2-7 a.m.
Wichita, Kas.	220,000	–	NO, but being considered	—	— : —
Wilmington, Del.	110,422	15	NO, ord. repealed in 1950	—	— : —
Worcester, Mass.	291,256	–	YES, Nov. thru March	YES, parking permitted on certain sides of streets	No parking : 12-6 a.m.
Youngstown, Ohio	170,000	24	YES, in downtown area	YES, during winter months	No parking : 3-6 a.m.

* Included on basis of population being under 250,000 in 1950.



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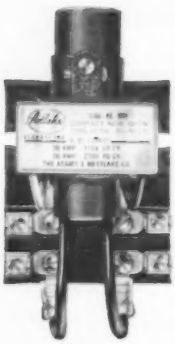

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routes. This arrangement is followed in El Paso, Fall River, Fort Wayne, Miami, South Bend, Tampa, and Youngstown. An opposite position is taken by Little Rock, where night parking is prohibited "on any street *outside* of the congested district."

Reasons for Ban

Reasons for prohibiting all-night parking include aid in law enforcement, street cleaning, snow removal, and fire-fighting. Peoria states that its parking ban has "reduced night hit-and-run accidents involving parked cars, facilitates snow removal and street cleaning, and is a deterrent to vandalism and robbery."

Springfield believes its ban has "materially reduced burglary and crimes of vandalism." Providence, with nearly 30 years' experience, says that its all-night parking ban "materially assists night patrolmen" in "detecting criminals at work" since "most crimes requiring the use of motor vehicles are committed during the night or early morning hours. . . . Even if parking were permitted on only one side of streets, a satisfactory [snow] plowing operation could not be accomplished, since it is necessary to plow even the residential streets on a curb-to-curb basis."

The Waterbury survey finds no indication of any lessening of all-night parking bans. The public demand for effective street cleaning and particularly snow plowing and removal, plus the need of preventing car vandalism and theft cannot be met by weakening bans against all-night parking. Youngstown, where parking is now prohibited on some streets on one side only, says that "with the ever-increasing number of automobiles on our streets it is only a matter of time until there will be prohibition of parking on most of the streets at all times."

Where home garage space is inadequate and night parking on the streets is banned, the ray of hope is for the provision of a ring highway around the business district and the location of parking fields along it. These fields could be reached by foot, when within walking distance, or by public transit vehicles.

A motorist places a ticket in the machine, inserts coins and gets back a receipted stub from the sidewalk "Justice."

Curbstone Fine Collector

AN automatic curbstone traffic court, known as the "Collectall," that collects fines and issues a perforated receipt, is now on the market. The manufacturer's idea is that one be placed on a corner of each intersection in the business district. This quiet little sidewalk Justice of the Peace would not only save motorists the time and trouble of going to court but could be a silent reminder of the price of wrong parking.

How It Works

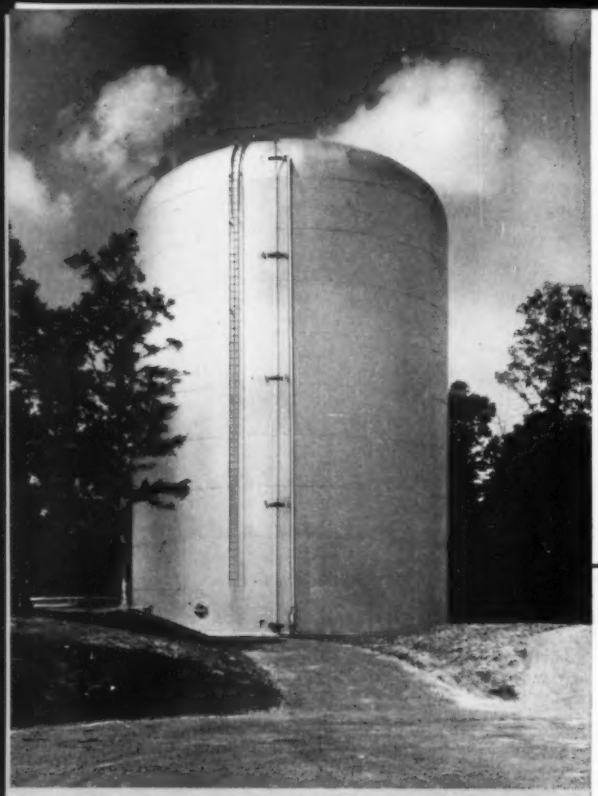
A policeman places a specially designed parking violation ticket on the offender's car. The ticket is 6½ inches by 2 inches and has a 2-inch receipt stub at the right end. To pay fine in collection meter located on the corner:

1. Insert ticket in meter.
2. Deposit one half dollar or two quarters in proper slot in meter.
3. Crank lever—then release.
4. Remove receipted ticket.

When the lever handle is cranked after the coins are inserted in the "Collectall" the one end of the ticket bearing the serial number is cut off and retained in the collection box and the receipt stub, with the same serial number, is perforated PAID.

The curbstone courthouse is made of cast aluminum painted gray. It is 11 inches high, 6½ inches deep, and 6½ inches wide. It can be mounted on the same post as a parking meter or other municipal device, or on its own post.

It is manufactured by the American Bank Equipment Company, which is located at 5408 Jefferson St., Philadelphia, Pa.



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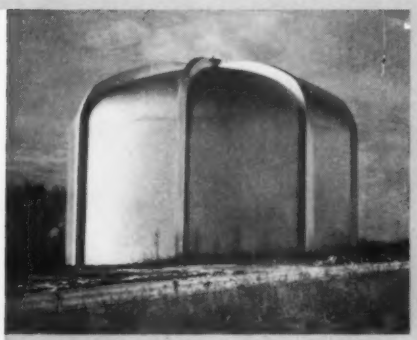
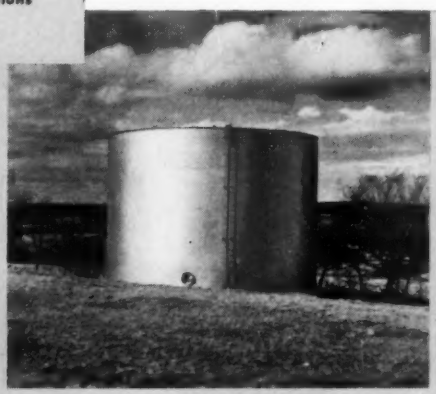


OTTUMWA, IOWA. Steel reservoir, 4,200,000 gallons capacity. Diameter 110 ft., head range 60 ft. 4 in.



LIBERTY, NEW YORK. Steel reservoir, 300,000 gallons capacity. Diameter 42 ft., height 29 ft. 3 in.

ST. PAUL, MINNESOTA. Steel reservoir, 2,000,000 gallons capacity. Diameter 70 ft., head range 70 ft.

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DES MOINES (8), 913 Tuttle Street
DALLAS (1), 1217 Praetorian Bldg.
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Good planning techniques are featured in new plaza in Stuttgart, Germany

Synchronized traffic signals now permit crosstown travel at 30 miles per hour.

Replanning a Railroad Terminal Plaza

By JOHN DORNBERG

AMERICAN city planners may think they have the world's biggest headaches . . . and perhaps they do. But they tend to underestimate the skull-breakers that face their European counterparts who frequently have to contend with double and triple the traffic load they had 10 years ago on streets that were designed hundreds of years ago for the use of ox and horse carts.

In Stuttgart, Germany, City Planning Director Gustav Heeb had to solve such a problem earlier this year. In doing so, Director Heeb completely revamped the street system of central Stuttgart (population 525,000—unofficial 1954 census) at a cost of less than $600,000.

The result was not only faster deployment of vehicular and pedestrian traffic, but also some attractive architectural and landscaping developments that make the area better looking than it was before. The main attraction of the new system is a pedestrian underpass across the city's busiest downtown intersection. It is serviced with escalators to and from the street level.

The Problem

Basically, this was the situation with which Director Heeb had to cope: Stuttgart's railroad station is a dead-end station, which is common in Europe. It is located in the center of downtown and is bordered on the northwest by Heilbronner Strasse, a major traffic artery that doubles as German Federal Highway 27. On the eastern side of the station is Cannstatter Strasse, a main line to several important suburban districts. On the other side of Cannstatter Strasse are the landscaped gardens of the Stuttgart Castle.

Directly in front of the station is a 150-foot-wide, 600-foot-long street called Bahnhofplatz. This is the main crossing point for all traffic to all sections of the sprawling city. It is also a boarding point for 15 streetcar lines; it has four streetcar tracks; and it does double duty as the loading and unloading point for railroad station traffic — which amounts to approximately 140,000 people daily.

The eastern crosswalk to the station had a daily pedestrian load of 90,000 persons. During the evening rush hour, 10,000 motor vehicles and 200 streetcars (each 60 feet long and divided into three sections) converge on the 150-foot by 600-foot area from six different sections. The load consisted of cross-town, cross-state, and railroad passenger traffic.

"Our first problem," states Director Heeb, "was to get those 90,000 pedestrians off that crosswalk. Those weren't ordinary pedestrians, but people rushing to catch streetcars, trains, and taxicabs. They paid no attention to lights or policemen—for the most part we were dealing with 90,000 jaywalkers."

Moving the railroad station would have been prohibitive in costs. The area was bounded on the west by a series of high hills; on the east by the castle gardens, and, across Bahnhofplatz by a block-long piece of

This attractive underpass now serves the 90,000 congestion-causing pedestrians.

Not "How Big?" But "How Good?"

The ability of any motor grader to do hard cutting, and move big blade loads of material in the lower gears, where heavy work is done, depends entirely upon the amount of weight carried on *driving wheels*. Total weight has nothing to do with it.

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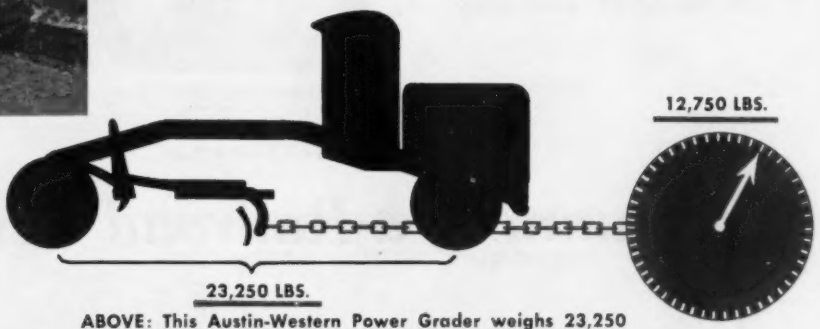
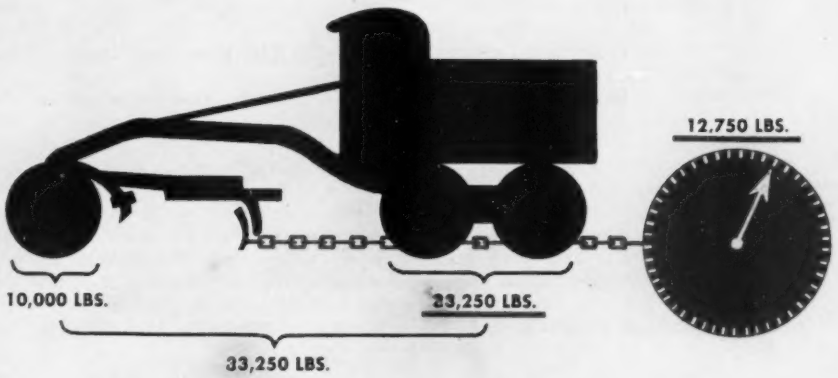


ABOVE: This Austin-Western Power Grader weighs 23,250 lbs.—all carried on driving wheels. Working in average dirt, it has a blade pull of 12,750 lbs.

BELOW: To obtain the same blade pull, an ordinary motor grader would have to carry 23,250 lbs. on its *rear drivers*; PLUS about 10,000 lbs. on its *dead front end*, for a total of 33,250 lbs.



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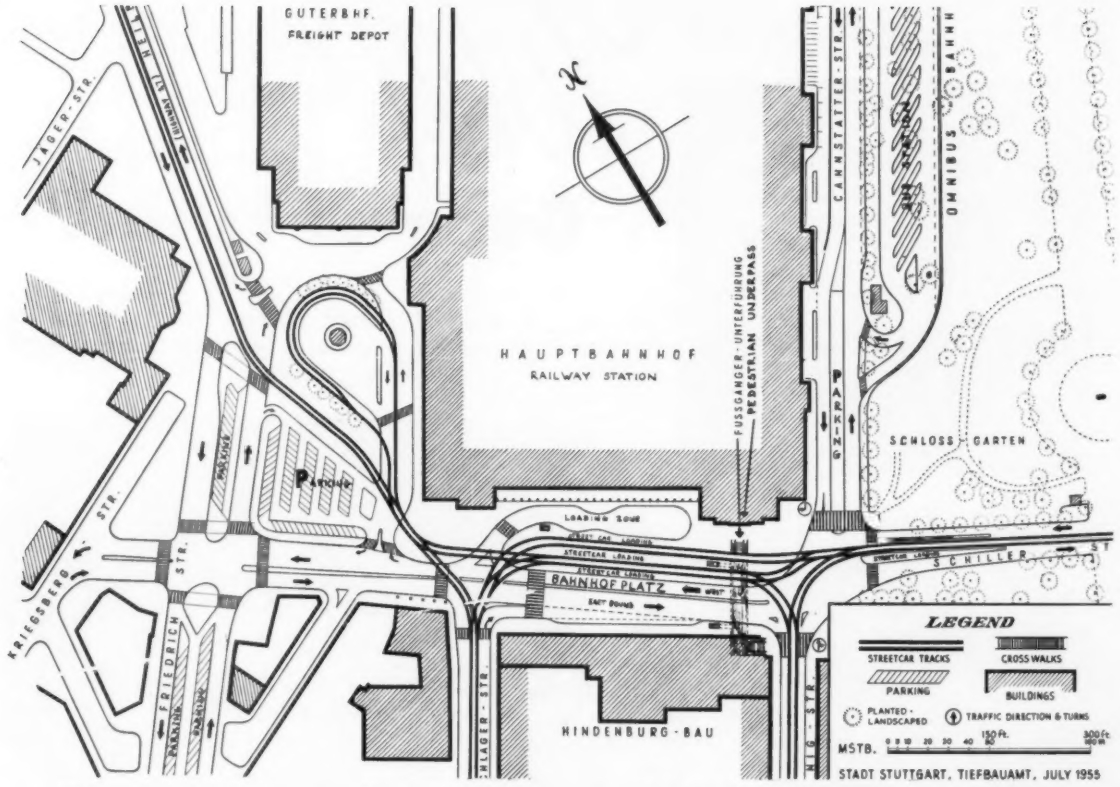


With traffic rerouted, on-street parking reduced, and streetcar track relocated, the Bahnhofplatz is more efficient.

property that is considered the most valuable in town. Director Heeb had to work within these confines.

The key to the solution was an old air-raid shelter underneath the street. It cost the city only $200,000 to build a 24-foot-wide pedestrian subway from the Konig Strasse-Bahnhofplatz corner right to the station's main entrance. The underpass has one stairway that leads directly to the streetcar platforms and one that leads to the north side of the street. The two main stairways also have escalators 3 feet wide with a capacity of 8,000 people hourly. At street level, the crossing has been closed off with iron railings, and three policemen are on the corners as added insurance against jaywalkers.

Herr Heeb's next battle was to keep parked cars out of the train station entrances. Previously, the loading area in front of the station was a two-way street that always had a conglomeration of private cars, taxicabs, trucks, and buses. Now traffic has to move out the same end from which it enters and only taxis park for any length of time.

After that, the planning director attempted to lighten the traffic load itself. The first step was to re-route Highway 27 traffic from Heidelberg away from the Bahnhofplatz and around the central downtown area.

Streetcar Tracks Relocated

Streetcar tracks and boarding platforms had been in the middle of the street with traffic moving on both sides, streetcar tracks criss-crossing the automobile patterns. After closing off the loading area to the station, Herr Heeb moved the tracks as close to the station as possible. Pedestrians thus crossed to the platforms via the underpass, or at worst had to cross only the taxicab parking area to reach the streetcar stop.

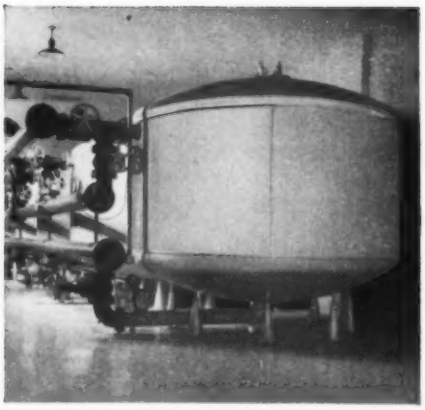
Sixty feet of street width remained, and Herr Heeb went to work on that. He divided it into two westbound and three eastbound lanes, with left and right turns permitted at the eastern corner. He divided the traffic with a yard-wide center strip of green on which new fluorescent and mercury arc lamps were erected.

Highway 27 traffic and a large portion of the crosstown traffic were rerouted from the central city by establishing a multilane system west of the downtown area. During the peak rush hour, Bahnhafplatz traffic was reduced by more than 40%.

Stuttgart and its many suburbs are serviced by 65 different bus routes, more than 40 of which had their terminals in three different locations near the railroad station. The remaining 25 lines terminated at other crucial traffic points throughout the central city. Herr Heeb established a 24-platform bus station on the eastern side of the railroad depot — Cannstatter Strasse — and moved every bus line to that location.

The entire system now features excellently paved asphalt streets in contrast to the cobblestones that were there before; good illumination at night, and a synchronized signal-light system that permits uninterrupted-green travel in all directions at 30 miles per hour.

After the project was completed last July, Herr Heeb had gained additional parking space for 150 cars. The projects thus far have cost the city roughly $600,000.



Why General Filter?

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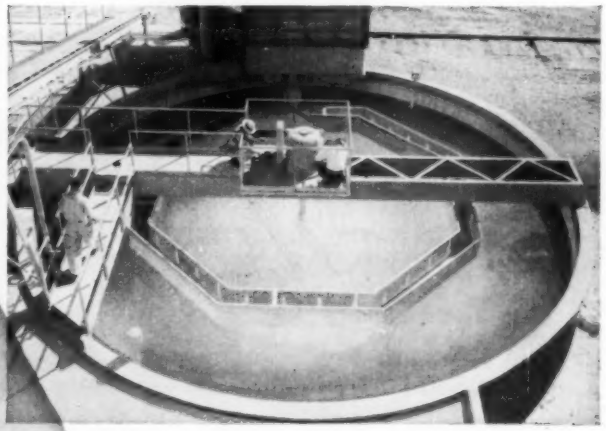

INSTALLATION SUPERVISION . . . General Filter "job-engineers" each installation to the consulting engineer's specification . . . supervises the installation and trains the personnel who will work with the equipment.

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Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Airports—City Liable When Fall Causes Injury

$30,000 in damages for severe personal injuries received when plaintiff fell while attempting to descend from one landing, adjacent to building at municipal airport, to another, was held not to be excessive award against city and tenant airlines. *City of Knoxville* v. *Bailey*, 222 F.2d 520 (6th Cir., April 22, 1955).

Assessments—Sewer and Street—Reinstatement Invalid After Omission from List for Five Years

Where assessments for sewers and streets levied by City of Cincinnati were omitted from the list for more than five years, held, County Auditor was without authority to restore them and purchaser at sale did not take title subject to such assessments. *Bernhard* v. *O'Brien*, 126 N.E.2d 349 (Ohio App. Hamilton Cty., December 21, 1953).

City Council—Use of City Funds to Defend Upheld

Where a Councilman was elected Mayor of Village of El Portal by Council as provided by Village Charter, and another Councilman challenged by quo warranto first Councilman's right to office, held, Council was justified in expending public funds to insure that their action was properly defended. *Miller* v. *Carbonelli*, 80 So.2d 909 (Fla., June 15, 1955).

City Property—Loss of By Adverse Possession

Where city built a retaining wall 6 feet back from sidewalk to protect certain steps constructed by city, and where defendant believed retaining wall to be on his land and extended same and exercised for 15 years various acts of ownership over strip of land enclosed by wall, defendant acquired title to strip by adverse possession. *Goldman* v. *Quandrato*, 114 A.2d 687 (Conn., May 31, 1955).

City-State Relations—Legislators Sale of Services to State and Cities—Act Limiting Upheld

In action to have statute barring legislators from furnishing materials and services to state or any of its subdivisions for consideration in excess of $10,000, held, (a) such statute was valid and (b) statute does not make an improper classification either as classifying legislators apart from other citizens or as distinguishing between legislators with small and large businesses. *Lindberg* v. *Benson*, 70 N.W. 2d 42 (N.D., April 18, 1955).

City Vehicle—Accident—Plumbing Inspection Governmental Function

In action brought against city for damage caused by negligent operation of city automobile by City Plumbing Inspector, held, city not liable as use was within governmental capacity of city. *Walker* v. *City of Dallas*, 278 S.W.2d 215 (Tex.Civ. App., Nov. 23, 1953).

Drunken Driving—Delay in Prosecuting Appeal After Conviction

Where defendant was convicted for driving a motor vehicle upon city streets while under the influence of intoxicating liquor, held, where notice of appeal from conviction by police justice had been given, but the appeal was not taken for three terms of court, appeal was properly dismissed for want of diligent prosecution. *City of Casper* v. *Wagner*, 284 P.2d 409 (Wyo., May 24, 1955).

Garbage Truck—Injury to City Employee—City Not Liable

Where city garbage truck was in good mechanical condition and was the newest and safest type for use for which it was intended, city was not liable for injuries sustained by city employee, who knew that the packing plate mechanism was in motion but who, nevertheless, placed himself in a position of obvious danger. *City of Long Beach* v. *Spooner*, 79 So.2d 833 (Miss., May 9, 1955).

Intoxicating Liquors—Town's Right to Regulate

In suit for a declaratory judgment that the Town of East Ridge is a municipality within the statute regulating traffic in alcoholic beverages, held, proceeding was a proper one and town was a full municipal corporation within the meaning of the statute. *Crabtree* v. *Stephens*, 278 S.W.2d 672 (Tenn., April 7, 1955).

Legal Notices Valid Where Printed Outside City

In question of legality of publication of legal notices by city in certain newspaper, held, where newspaper had offices in city, received mail within city, listed its address as within city and delivered newspapers to newsstands within city, newspaper was published within city even though printing plant was located outside of city. *Wildwood Independent Record Publishing Co.* v. *City of Wildwood*, 114 A.2d 483 (N.J.Super.Law Div., May 12, 1955).

Milk—Ban On Out of State Invalid

Borough milk ordinance, which, in effect, prohibited sale of milk which was produced outside of state, was invalid. *Borden's Farm Products of New Jersey* v. *Board of Health of the Borough of Somerville*, 114 A.2d 788 (N. J. Super.Law.Div., June 2, 1955.

Notice of Claim—Mailing to Wrong City Department Invalidates

The erroneous mailing of statutory notice of claim to the Comptroller of the City of New York instead of to the Transit Authority was a mistake in the manner of service that could not be rectified, and late filing could not be excused on the grounds of infancy of one of the parties. *Ringgold* v. *New York City Transit Authority*, 141 N.Y.S.2d 365 (Sup.Ct.App. Div., June 7, 1955).

Off-Street Parking Outside City—Condemnation for Denied

Word "purchase" in statute, providing that legislative body of city may purchase, lease, or receive real estate situated inside or outside city limits, did not expressly authorize city to take private property for off-street parking outside of city's boundaries by eminent domain proceedings. *Harden* v. *City of Hayward*, 284 P.2d 9 (Calif., May 27, 1955).

Playground Directors—City Not Liable for Negligent Acts

In action against city for injuries sustained when plaintiff, at direction of public playground attendant, was riding on handle bars of another boy's bicycle, held, city was not liable for negligence of employee. *Farrell* v. *City of Long Beach*, 283 P.2d 296 (Calif.App., May 11, 1955).

Public Property—School As Higher Public Use Than Park

Action by Board of Education against Park District of city for fee simple title to land dedicated to public use, held, use School Board wished to make of land was more necessary than public use to which the property was being put by the Park Board, and judgment for Board of Education affirmed. *Board of Education of City of Minot* v. *Park District of City of Minot*, 70 N.W.2d 899 (N.D., June 6, 1955).

Schools—Gymnasium Accident—Board of Education Liable

In action for personal injuries suffered by student while playing basketball in high school gymnasium, held, where 48 boys were playing basketball in area 80 feet long and 43 feet wide, such situation created a condition of danger that Board of Education should have reasonably anticipated and Board could be held liable. *Bauer* v. *Board of Education of City of New York*, 140 N.Y.S.2d 167 (Sup.Ct.App. Div., May 2, 1955).

Solicitors—Shrubberry—Ordinance Invalid—Interstate Commerce

Ordinance requiring that street salesmen and door-to-door salesmen be licensed was invalid as undue burden on interstate commerce in its application to agent of New Jersey landscape shrubbery company while soliciting business and replacing shrubbery earlier sold and delivered. *Village of Beachwood* v. *Leuser*, 127 N.E. 2d 63 (Ohio C.P. Cuyahoga Cty., March 14, 1955).

Tax Exemption Denied Airport Property Used for Farming

Exemption from county taxation was properly denied to that part of city realty which was located outside city and devoted to farming, even though rents and income from farming activities were expended for operation and maintenance of municipal airport on remaining land. *City of Lawrenceville* v. *Maxwell*, 126 N.E.2d 671 (Ill., April 19, 1955).

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Conventions—When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

Feb. 5-8—Washington, D. C.
NATIONAL CITIZENS CONFERENCE. Annual Meeting of the American Planning and Civic Association (Statler Hotel). For further information write Miss Harlean James, Executive Secretary APCA, 901 Union Trust Bldg., Washington 5, D. C.

Feb. 7-9—Buffalo, N. Y.
ASSOCIATION OF TOWNS OF THE STATE OF NEW YORK. Annual Meeting (Hotel Statler). Exec. Sec., Edward F. N. Uthe, 91 State St., Albany, N. Y.

Feb. 8-10—Indianapolis, Ind.
AMERICAN WATER WORKS ASSOCIATION—Indiana Section. Annual Meeting (Sheraton-Lincoln). Sec.-Treas., Robert J. Becker, 113 Monument Circle, Indianapolis 6, Ind.

Feb. 13-15—Cleveland, Ohio
ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS. Annual Convention (Hotel Cleveland). Sec.-Treas., Ward K. Parr, Box 376, 1224 E. Engineering Bldg., Ann Arbor, Mich.

Feb. 13-16—New York, N. Y.
ASSOCIATED GENERAL CONTRACTORS. Annual Meeting (Waldorf-Astoria). Managing Director, H. E. Foreman, 1227 Munsey Bldg., Washington 4, D. C.

***Feb. 14-17—Los Angeles, Calif.**
CALIFORNIA MUNICIPAL UTILITIES ASSOCIATION. Annual Conference (Mayfair Hotel). Sec., F. V. Frey, Room 108, City Hall, Pasadena, Calif.

Feb. 29-March 2—Boston, Mass.
ASSOCIATION OF HIGHWAY OFFICIALS OF THE NORTH ATLANTIC STATES. Annual Convention (Hotel Statler). Asst. Sec. and Treasurer, Kenneth D. Rice, 1035 Parkway Ave., Trenton, N. J.

March 6-10—Colorado Springs, Colo.
AMERICAN CONCRETE PIPE ASSOCIATION. Annual Convention (Broadmoor Hotel). Managing Dir., Howard F. Peckworth, 228 N. LaSalle St., Chicago 1, Ill.

March 7-9—Atlantic City, N. J.
NEW JERSEY MOSQUITO EXTERMINATION ASSOCIATION. Annual Convention (Chalfonte-Haddon Hall). Sec., Bailey B. Pepper, New Brunswick, N. J.

March 8-10—Washington, D. C.
AMERICAN SOCIETY FOR PUBLIC ADMINISTRATION. Annual Convention (Hotel Statler). Sec.-Treas., Miss Laverne Burchfield, 1313 E. 60th St., Chicago 37, Ill.

March 14-16—Atlantic City, N. J.
NEW JERSEY SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Meeting (Traymore Hotel). Sec.-Treas., Michael S. Kachorsky, P. O. Box 66, Manville, N. J.

March 15-17—Lake Charles, La.
LOUISIANA MUNICIPAL ASSOCIATION. Annual Convention (Majestic Hotel). Sec.-Treas., Mrs. Douglas M. Warriner, 539 Reymond Bldg., Baton Rouge, La.

March 18-21—Augusta, Ga.
AMERICAN WATER WORKS ASSOCIATION—Southeastern Section. Annual Meeting (Bon Air Hotel). Sec.-Treas., N. M. deJarnette, Georgia Department of Public Health, 245 State Office Bldg., Atlanta, Ga.

March 18-24—Washington, D. C.
AMERICAN CONGRESS ON SURVEYING AND MAPPING jointly with American Society of Photogrammetry. Annual Convention (Shoreham Hotel). For further information write ACSM-ASP, Box 470, Washington 4, D. C.

March 19-21—Little Rock, Ark.
ARKANSAS WATER AND SEWAGE CONFERENCE. Annual Meeting (Hotel Marion). Sec., Harrison Hale, Southern State College, Magnolia, Ark.

March 21-23—Chicago, Ill.
AMERICAN WATER WORKS ASSOCIATION—Illinois Section. Annual Meeting (LaSalle Hotel). Sec., D. W. Johnson, Cast Iron Pipe Research Association, 122 S. Michigan Ave., Chicago 3, Ill.

March 26-30—Amherst, Mass.
ADVANCE SEWAGE TREATMENT WORKS OPERATORS SHORT COURSE. Sponsored by Massachusetts Department of Public Health, The New England Field Training Center and The University of Massachusetts. For information address Mr. C. I. Sterling, Jr., Department of Public Health, 511 State House, Boston 33, Mass.

April 2-5—Lafayette, Ind.
PURDUE ROAD SCHOOL. 42nd Annual School (Union Building, Purdue University). Exec. Sec., Ben H. Petty, Professor of Highway Engineering, CE Bldg., Purdue University, Lafayette, Ind.

April 3-5—Philadelphia, Pa.
AMERICAN WATER WORKS ASSOCIATION—Pennsylvania Section. Annual Meeting (Bellevue-Stratford Hotel). Sec., L. S. Morgan, State Department of Health, Greensburg, Pa.

April 4-6—Topeka, Kans.
AMERICAN WATER WORKS ASSOCIATION—Kansas Section. Annual Meeting (Jayhawk Hotel). Sec., H. W. Badley, Neptune Meter Co., 119 W. Cloud St., Salina, Kans.

April 5-6—Chapel Hill, N. C.
FIFTH SOUTHERN MUNICIPAL AND INDUSTRIAL WASTE CONFERENCE (Carolina Inn). For information address Daniel A. Okun, Department of Sanitary Engineering, School of Public Health, University of North Carolina, Chapel Hill, N. C.

April 5-7—Safford, Ariz.
AMERICAN WATER WORKS ASSOCIATION—Arizona Section. Annual Meeting Sec., Quentin M. Mees, Arizona Sewage and Water Works Association, 721 N. Olsen Ave., Tucson, Ariz.

April 6-7—Livingston, Mont.
AMERICAN WATER WORKS ASSOCIATION—Montana Section. Annual Meeting (Murray Hotel). Sec., A. W. Clarkson, State Board of Health, Helena, Mont.

***April 11-12—Washington, D. C.**
NATIONAL HOUSING CONFERENCE. Annual Meeting (Statler Hotel). Sec., Laurine A. Winlack, 1025 Connecticut Ave. NW., Washington D. C.

April 11-13—Lincoln, Nebr.
AMERICAN WATER WORKS ASSOCIATION—Nebraska Section. Annual Meeting (Cornhusker Hotel). Sec., J. E. Olsson, Fulton & Cramer, 922 Trust Bldg., Lincoln, Nebr.

April 18-20—Utica, N. Y.
AMERICAN WATER WORKS ASSOCIATION—New York Section. (Hotel Utica). Sec., Kimball Blanchard, Rensselaer Valve Co., 11 W. 42nd St., New York 36, N. Y.

April 23-25—London, Ontario
AMERICAN WATER WORKS ASSOCIATION—Canadian Section. Annual Meeting. (Hotel London). Sec.-Treas., Dr. A. E. Berry, 72 Grenville St., Toronto, Ontario, Canada.

***April 24-26—Los Angeles, Calif.**
AMERICAN PUBLIC POWER ASSOCIATION. Annual Meeting (Biltmore Hotel). Gen. Mgr., Alex Radin, APPA, 1757 K St., Washington 6, D. C.

(Continued on page 205)

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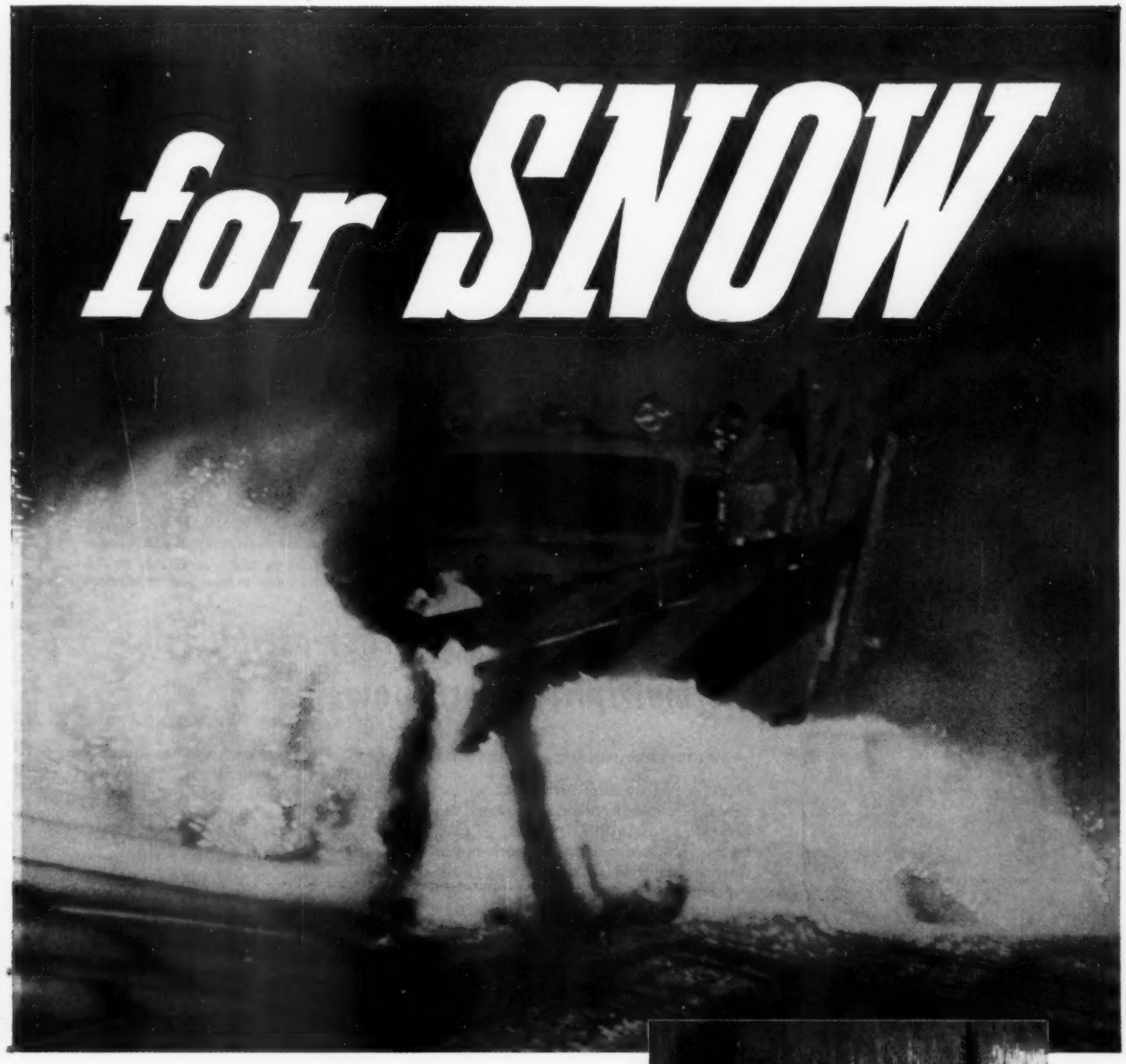

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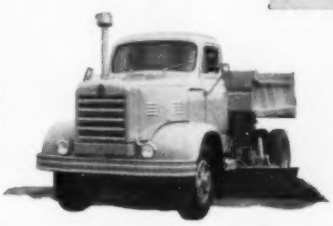

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The OC-3 belies its small size with the big work it can do when equipped with the front end loader. Here it's doing fast cover-up job on sewerage plant project.

—saves cost on big sewer job!

Here, on this big North Carolina sewage plant project, you can see how this versatile Oliver OC-3 uses its rugged, compact design to make the most of digging, dozing and loading equipment.

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Recent City Manager Appointments

The following portraits are of city managers whose appointments have been announced in preceding issues of *The American City*

Chester Williams
Mascoutah, Ill.

W. Russell Hatchett
Virginia Beach, Va.

Robert L. Hegel
Brookfield, Mo.

Donald E. Hobbs
Bar Harbor, Maine

Howard L. McCalla
Aransas Pass, Texas

RUPERT A. ANDEREGG, manager of Amberly Village, Ohio, was appointed city manager of Wyoming, Ohio, succeeding F. G. Gedge (retired).

Elmira, N. Y., has appointed THOMAS A. BANFIELD, a methods engineer, to succeed Robert E. Quin as city manager.

The first manager of Arvada, Colo., is VERNON BARNETT, manager of Hot Springs, S. D.

KENNETH L. BOLIN, the city engineer, was appointed city manager of Moberly, Mo., succeeding H. P. Phelan (deceased).

South Salt Lake, Utah, has appointed HOMER C. CHANDLER, a management intern, to succeed William T. South as city manager.

Succeeding Thomas M. Libby as manager of Provincetown, Mass., is JAMES V. COYNE, manager of Limestone, Maine.

N. G. DAMOOSE, city manager of Ypsilanti, Mich., was appointed city manager of Traverse City, Mich., succeeding C. L. Anderson.

The first manager of Gardiner, Maine, is JULES DESHAIES, the city auditor at Lewiston, Maine.

Vallejo, Calif., has appointed LOHN R. FICKLIN, manager of Hayward, Calif., to succeed Alfred L. Wanger as city manager.

North Kingstown, R. I. has appointed RODERIC A. GARDNER, the administrative assistant at Kansas City, Mo., to become its first city manager.

PAUL GARVIN, the city assessor, was appointed city manager of Springfield, Mich., succeeding Willard Norris.

Succeeding Everett W. Schadt as city manager of Thomasville, N. C., is W. T. GREEN, JR., an administrative assistant at Thomasville.

The first manager of Barre, Vt., is PAUL H. HERMANN, former manager of Bennington, Vt.

JAMES S. HUGHES, city manager of Greenville, N. C., was appointed city manager of Pompano Beach, Fla., succeeding Carl S. Burbridge.

The first manager of Middletown, Tp., Pa., is ANGUS JOHNSON, a community planner in Pennsylvania.

Fort Pierce, Fla., has appointed WALTER F. JOHNSON, city manager of Emporia, Kans., to succeed Howard Stanton as city manager.

ROY A. KANE, administrative assistant at Winstom-Salem, N. C., was appointed town manager of Bethel, Vt., succeeding William T. S. Jacobson.

The first manager of Sidney, Ohio, is GLENN LOVERN.

The former mayor of Grandfield, W. G. MEDLOCK, was appointed city manager of Grandfield, Okla., succeeding F. G. Patterson.

CLIFFORD G. PETRIE, manager of Culver City, Calif., was appointed city manager of West Covina, Calif., succeeding Robert Flotton.

The manager of Elmira, N. Y., ROBERT E. QUIN, was appointed city manager of Poughkeepsie, N. Y., succeeding Hayden B. Johnson.

Succeeding Philip W. Ancell as city manager of South Norfolk, Va., is EARNEST L. THACKER.

Oberlin, Ohio, has appointed FRED E. WEISBROD, assistant public works director at Silver Spring, Md., to succeed Philip Zahm as city manager.

KENNETH B. WILLIAMS was appointed first city manager of San Pablo, Calif.

WALTER H. WOLFE, the clerk and finance director, was appointed city manager of Grafton, W. Va., succeeding J. Frank Wiseman.

Berwick, Maine, has appointed SIDNEY O. YOUNG, JR., in private business in Boston, to succeed John P. Bibber as city manager.

CLARENCE E. RIDLEY
Executive Director
International City Managers' Association

Housing Standards Study Underway In N. Y.

COMMUNITIES in New York State may be able to adopt a model municipal housing code when a just-authorized housing standards study is completed in the Empire State. The study, to be undertaken by the New York State Division of Housing, is being partially financed by a $96,600 grant from the federal Housing and Home Finance Agency.

The study will recommend minimum standards for the design of dwelling units suited to New York State communities. Recommendations for the administration and enforcement of local housing regulations will also be made.

A state housing code committee composed of representatives of interested State agencies, will be established to consider the findings and recommendations as a basis for an official state housing code available for local use on an optional basis.

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Zoning and Planning Notes

Edited by NORMAN WILLIAMS, Jr.

Soil Removal and Grading

MICHIGAN. *Buckley* v. *City of Bloomfield Hills*, 72 North Western (2d) 210 (Supreme Court, October 3, 1955).

A 15-acre tract of undeveloped hilly land was located in a residence district, and the owner made an agreement to level the land, to sell the sand and dirt taken out, and to restore the top soil. The city authorities argued that what was involved was a commercial activity, i.e., carrying on a sand and gravel business in a residential district. The owner argued that the leveling and soil removal was necessary to prepare the land for residential development, and was thus purely incidental to the projected residential use.

In the opinion, the Court held that a zoning restriction requiring that land be kept hilly rather than made flat could not be justified as a use of the police power. However, the Court noted that the projected operation might be so protracted as to indicate that a commercial gravel pit operation was involved, and remanded the case for an examination of this point.

This is one of those situations where the zoning law should explicitly cover the main outlines of the problem. Grading and preparing land for residential use may be a permitted accessory use in a residence district, subject to specified conditions. These conditions will then delimit the boundaries of any controversy which may arise.

"Little League" Baseball In Residential Areas

NEW YORK. *Babcock* v. *Port Washington Little League*, 144 New York Supplement (2d) 179 (Supreme (lower) Court, July 7, 1955).

NEW JERSEY. *Lieberman* v. *Township of Saddle River*, 116 Atlantic (2d) 809 (Appellate Division, September 28, 1955).

"Little League" baseball for youngsters has been creating some problems, primarily because of the resulting noise and traffic, in quiet residential areas.

In the Port Washington case, a "Little League" baseball field with four small diamonds had been authorized in a well-kept-up residential area, by a special permit issued by the local Board of Appeals, subject to certain conditions; and modification of those conditions was sought in order to extend the hours of play and to install gates and authorize the continued use of portable bleachers. It appeared that the field was screened from view by trees and shrubs. The Court held that the "Little Leagues" were a worthy cause which should be encouraged, and that any annoyance which might result was unimportant compared with proper training of the young. However, the Court held that the Board of Appeals had approved the change of conditions without following the required procedure.

In the Saddle River case, the Court went into a more elaborate discussion of the value of such activities in keeping children out of trouble, and described at length the expenditures incurred over a period of months without complaint from plaintiff. The Court held that the noise made by children at play might annoy some people but was neither a nuisance per se nor a "trade" or industry and so zoned out of residence districts, and therefore simply had to be put up with.

Requirement for Public Sewer Facilities

ILLINOIS. *River Forest State Bank* v. *Village of Hillside*, 129 North Eastern (2d) 171 (Supreme Court, September 23, 1955).

In this case a subdivision plat creating 42 lots was approved by the Village in a recently-annexed section. There was some question whether this was done with full knowledge that no public sewer facilities were available to serve the area. The lot sizes in the subdivision were more than twice as large as required by the local zoning ordinance, apparently in order to accommodate the use of septic tanks. Shortly thereafter the Village passed an ordinance regulating the use of septic tanks; and water mains (but no sewers) were then installed in the subdivision at a cost of about $20,000. Subsequently, the Village passed an ordinance requiring sewer connections for all future development. The nearest sewer outlet in the Village was 1¾ miles away, at a higher elevation.

The Court held that a requirement for sewer connections, while valid in general, should not be enforced in these circumstances.

Regulations to Protect Buildings Against Fire

MISSOURI. *Wellston Fire Protection District of St. Louis County* v. *State Bank & Trust Company of Wellston*, 282 South Western (2d) 171 (Court of Appeals, September 20, 1955).

A group of villages in St. Louis County organized a fire protection district, pursuant to a state enabling act, and established a series of regulations covering the construction of buildings to prevent danger of fire. A dispute ensued between the fire protection district and the City of Wellston on whether the enabling act and the organization of the district superseded the city's right to impose its own controls over the construction of buildings for fire protection purposes. City officials supported the action by bank officials in refusing to seek a permit from the district.

The Court held that the city's power was in fact superseded, on the ground that, if two public bodies promulgated conflicting regulations over the same subject-matter, the result would be intolerable confusion. However, the Court noted that the City retained the right to regulate the design, appearance, and other features of a building.

Required Demolition of Illegal Structure

TEXAS. *Newton* v. *Town of Highland Park*, 282 South Western (2d) 266 (Court of Civil Appeals, July 15, 1955).

At the start of this opinion, the Court commented that the controversy involved had been going on for so long that it resembled the Hundred Years' War. A building permit was issued authorizing the erection (in a single-family residence district) of a "pergola" in a rear yard, over an existing terrazzo floor, at an estimated cost of $250. Instead of this, what was actually built was a large wooden structure resembling a ship and costing some $60,000, which was rented out for large private parties. There was even a poem to advertise the elaborate facilities. The structure violated numerous provisions of the zoning ordinance, including both use and bulk regulations.

In a long opinion, the Court held that the structure had been built both in violation of the zoning ordinance and the building code, and ordered its demolition.

Hogs and Junk Yards in Industrial Districts

CALIFORNIA. *People* v. *Johnson*, 277 Pacific (2d) 45 (District Court of Appeals, 4th District, 1954).

CONNECTICUT. *Delmar* v. *Zoning and Planning Board of Town of Milford*, 109 Atlantic (2d) 604 (1954).

The San Bernardino County zoning ordinance permitted keeping and maintaining not more than 5 hogs in an M-1 (Light Manufacturing) district, but declared that more than that would be a public nuisance. In this case, defendant's practice was to buy hogs in small lots nearby and to keep them on his premises for several days until he had a truck load, and then to take them to market in Los Angeles. Sometimes there were as many as 40 hogs at his farm; on other days there were none. After a review of California precedents, the Court held that defendant was in fact keeping and maintaining hogs on the premises, and that the ordinance properly forbade this.

The Milford zoning regulations permitted junk yards in heavy industrial districts. However, the local zoning board refused to permit such an establishment in an area which, although zoned for such use, was "beautifully kept as to well-designed modern buildings and landscaping." It was noted that there were residental zones in Milford and elsewhere in Connecticut "which are not from an aesthetic standpoint on par with the character of the industrial zone in which the property in question is a part." The Court therefore upheld denial of a permit for a junk yard, apparently simply on the ground that the enabling act authorized the Board to take into account the nature and development of surrounding property.

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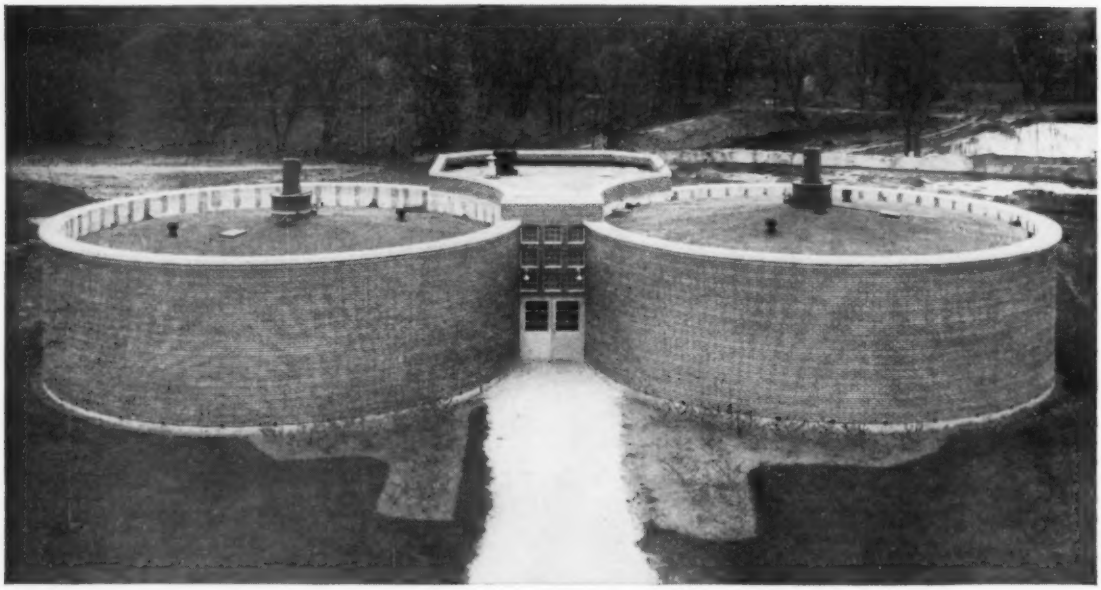

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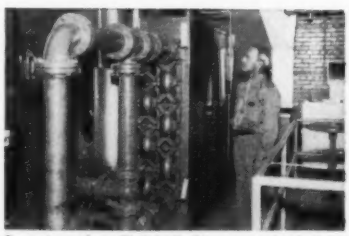
A PFT Floating Cover is installed in each of the 50′ digesters for accelerated digestion and positive scum submergence. Operations are simplified because additions and withdrawals can be made at times best suited to the overall operation . . . no fixed levels need be maintained.

Breakdowns and repairs are materially reduced because Floating Covers contain no moving parts. Since no mechanical agitation is required, and heat is supplied from *external* heaters, all maintenance takes place outside the tank.

In the Control Room, a *PFT Heater & Heat Exchanger unit* (500,000 B.t.u. per hr.) maintains close temperature control of the digesters *automatically*. Fired by digester or city gas, it cuts fuel costs by utilizing all gas produced in the digesters. Effective "controlled digestion" is due in large part to this automatic heat control!

Congratulations to Rochester, medical center of the world, on its excellent new plant and its far-sighted planning.



Superintendent Walter C. Hogenson checks heat output of PFT Heater & Heat Exchanger unit in the digester control building.

Design of plant by / *Toltz, King & Day, Inc. St. Paul, Minnesota*

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Contributed by WILLIAM A. JABINE, Attorney

Zoning Briefs

California

ZONING BARRING PRIVATE SCHOOLS UNCONSTITUTIONAL. The City of Piedmont's zoning ordinance prohibited schools other than public schools in Zone A. Since this zone included 98.7% of the city and the remaining zones were fully improved, private schools were in effect prohibited. In action brought to compel issuance of building permit for construction of parochial school in Zone A, Supreme Court reviewed decisions on similar issues in other states and said in a five to four decision, "the ordinance involved is unconstitutional and void because of its arbitrary and unreasonable discrimination against private schools." Roman Catholic Welfare Corporation of San Francisco v. City of Piedmont. 289 P. 2nd 438. (Supreme Court, Oct. 27, 1955, as Modified on Denial of Rehearing, Nov. 23, 1955.)

Florida

LOWER COURT'S DIRECTIVE NOT BINDING. Chancellor in lower court found ordinance restricting an area to single-family residences arbitrary and unreasonable and recommended that zoning authorities permit erection of duplex and multifamily buildings. Supreme Court held that recommendation was not necessarily binding but merely left way open to zoning authorities to rezone and place area in proper classification. Quattrochi v. MacVicar, 82 So.2nd 873. (Supreme Court, Oct. 31, 1955.)

CHURCH BARRED FROM RESIDENTIAL AREA. Where church sought to enjoin city from enforcing zoning ordinance forbidding it to build in residence area, Court held that such activities, by attracting large numbers of people to neighborhood at various times other than Sundays, would create traffic congestion and otherwise interfere with residential character of area. Church was denied permission to build. Florida, Miami Beach United Lutheran Church of the Epiphany v. City of Miami Beach. 82 So.2nd 849. (Supreme Court, Sept. 16, 1955, Rehearing Denied, Nov. 7, 1955.)

Georgia

DELEGATED LEGISLATIVE AUTHORITY REQUIRES STRICT COMPLIANCE. "The method of procedure prescribed in the passage of an ordinance or resolution by county or municipal authorities to whom authority to legislate has been delegated by statute or charter must be strictly followed." Georgia. Toomey v. Norwood Realty Co., 89 S. E. 2nd 265. (Supreme Court, Sept. 12, 1955.)

Michigan

TOWNSHIP HAD AUTHORITY TO BAN CONSTRUCTION OF TRAILERS AND SUBSTANDARD BUILDINGS. Provisions of ordinance which sought to forbid substandard dwellings and trailers held invalid so far as existing structures were concerned, but Court upheld Township's authority to forbid construction of trailers and substandard buildings in future. Michigan. Bane v. Township of Pontiac, 72 N. W. 2nd 134. (Supreme Court, Oct. 3, 1955.)

New Jersey

DISPLAY OF CARS FOR SALE BARRED. Extension of nonconforming use to include display of not more than six cars for sale denied, even though in past single car had been so displayed on property licensed for storage and parking of cars. New Jersey, Gross v Allen, 117 A 2nd 275. (Superior Court, Appellate Division, Oct. 17, 1955.)

EXTENSIVE RECONSTRUCTION DECLARED UNLAWFUL EXTENSION OF NONCONFORMING USE. Auto service station, in operation since 1930 in area restricted to single-family dwellings since 1941, denied application to modernize facilities by demolishing building and constructing new one and by enlarging area devoted to business by 48.5%. Held unlawful extension of nonconforming use, despite fact that new building would house activities hitherto conducted outdoors. Hay v. Board of Adjustment of Borough of Fort Lee, 117 A. 2nd 650. (Superior Court, Appellate Division, Oct. 21, 1955.)

"TAILORED" ORDINANCE HELD DISCRIMINATORY. While application to build storage garage was pending, zoning ordinance was passed which barred storage garages and imposed other restrictions which would hamper applicant. Court held that ordinance had been "tailored to fit the plaintiffs' particular situation and to block the plaintiffs' desires to improve their property." Ordinance held arbitrary and unjustified interference with legitimate use of private property. Roselle v. Wright, 117 A.2nd 661. (Superior Court, Law Division, Nov. 1, 1955.)

Ohio

VOTERS DENY ZONING CHANGE BUT COURT OVERRULES THEM. When zoning amendment to permit construction of filling station at corner of two highways in rural residence zone was defeated by voters at primary election, Court directed that permission be granted despite verdict of voters, saying: "real estate, situated as it is on the heavily traveled thoroughfares, has little suitability for residential use but rather is a prime business site." Ohio. State v. Miller, 129 N. E. 2nd 209. (Court of Appeals, Dec. 20, 1954.)

TAXPAYER'S RIGHT TO SUE PROTECTED. When city clerk refused to certify referendum petitions on zoning ordinance to Board of Elections, taxpayer sought mandamus to compel certification. Held proper action, and taxpayer entitled to award of $300 costs, although proposed ordinance was defeated at election. State of Ohio v. Johnson, 129 N.E. 2nd 519. (Court of Appeals, June 12, 1954.)

Texas

CITY'S RIGHT TO INJUNCTION CONFIRMED. Whereas owner, using property for business purposes in residence zone, sought to have injunction restraining him from such use set aside on ground that penal provision of zoning ordinance was sole remedy for enforcement thereof. Court let injunction stand. Hill v. City of Castle Hills, 282 S.W. 2nd 891. (Court of Civil Appeals, March 23, 1955, Rehearing denied Apr. 20, 1955.)

Washington

DENIAL OF PLANNING COMMISSION'S RECOMMENDATIONS UPHELD. Zoning change recommended by Planning Commission denied by Board of County Commissioners. Held proper exercise of police power by Board acting as legislative body. Court declined to inquire into discretion of Board in absence of fraud, and ruled that denial of Planning Commission's recommendations was not arbitrary or capricious. Lillions v. Gibbs, 289 P. 2nd. 203. (Supreme Court, Oct. 27, 1955.)

Virginia

GOLF RANGE UPHELD IN "HIGHWAY-AGRICULTURAL" ZONE. Where permission for golf range in "Highway-Agricultural" zone was granted by zoning administrator and was denied by Board of Zoning Appeals, Court held that Board's denial of use permits was made "not on the basis of whether or not it would be desirable or advantageous to the neighborhood or the community or the county at large" but the Board "undertook to do indirectly what it could not do directly" and so acted "without warrant in law" and was "plainly wrong." Virginia. Hopkins v. O'Meara, 89 S. E. 2nd I. (Supreme Court of Appeals, Sept. 14, 1955.)

Special Population Studies Scheduled to Aid Defense Planning

THE Federal Civil Defense Administration reports that the United States Bureau of the Census will undertake special studies in four cities to compile information needed in preparing detailed civil defense plans.

The surveys, to be made in Houston, Texas; Milwaukee, Wis.; St. Louis, Mo., and Washington, D. C., will estimate total in-city populations during daytime hours. Because these totals differ markedly from the nighttime figures when most people are at home, tabulations will be made of the numbers of persons at work, shopping, in school, etc. In addition, the surveys will determine the total population increases experienced in the subject cities since the 1950 decennial census.

It is hoped that the results of the surveys will lead to the development of basic population formulas that can be used in preparing civil defense survival plans in other cities.

The Census Bureau will conduct the studies using funds received from the Federal Civil Defense Administration.

WHITES DO ALL TYPES OF WORK WELL!

Aerial towers aren't the only advantageous applications for the White 3000 in public service. You'll find special reasons to consider White 3000's for packer refuse and garbage service, street flushers, street repair dump trucks, line truck applications and many others. Call your White Representative . . . now!

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Municipal & Civic Publications

The publications on these pages are available from the addresses indicated in each listing.

Basic Techniques of Traffic Control

TRAFFIC ENGINEERING — *By Theodore M. Matson, Wilbur S. Smith, and Frederick W. Hurd, the Bureau of Highway Traffic, Yale University. Available from the McGraw-Hill Book Company, Inc., 330 West 42nd St., New York 36, N. Y. 647 pp.* $12.50.

In 647 pages and something like 20,000 words, the late Theodore M. Matson, with co-authors Wilbur S. Smith and Frederick W. Hurd, sum up the makings of traffic engineering as it grew out of the training program of the Bureau of Highway Traffic at Yale University. Doubtless it is destined to be a textbook in this well-known course in this young field. As such, it is likely to grow into a standard work to be revised and enlarged until it may break into a whole library.

The five sections of the book give some direction to this eventuality. Section headings and the number of pages of each are as follows:

Section 1. Characteristics—166 pages
Section 2. Regulations—100 pages
Section 3. Control Devices and Aids—49 pages
Section 4. Design—165 pages
Section 5. Administration and Planning—83 pages.

"The authors recognize that it has not been possible to develop fully many phases of traffic engineering . . . and that many other volumes on the subject are available."

It would be well for city officials to examine this new book in relation to traffic information they actually need and can use.

Tacoma Rehabilitation Study

RENEWAL AREAS. *City Planning Commission, Tacoma, Wash., December* 1954. *13 pp. plus maps. Free.*

As the result of a survey by the health, public works, and fire departments of housing conditions adjacent to the central business district, the planning department was asked to report on the extent of deterioration in residential, commercial, and industrial areas of Tacoma. This report describes the findings and points the way to remedial action.

Arterial Traffic System for Wichita

PATTERN FOR THOROFARES, *Wichita, Kansas. Wichita City Planning Commission.* 1955. *54 pp.* $2.

The thorofare plan covered in this report has been adopted as part of the master plan of the Greater Wichita Area. The proposed system of arterial routes and major streets is intended to meet the requirements of traffic (anticipated in the traffic survey and forecast sections) as it will be in 1975. Numerous maps and overlays clearly illustrate present and future problems and their solutions, and will help the people of the area to understand the need for a complete and interrelated system of traffic facilities.

Metzenbaum on Zoning

THE LAW OF ZONING—*By James Metzenbaum of the Cleveland Bar. 2nd Edition. Baker, Voorhis & Co., Inc., 25 Broad St., New York 4, N. Y.* 1955. *3 vols. Over 2500 pp.* $49.50.

In this completely rewritten, greatly enlarged, revised edition of his 1930 book, Mr. Metzenbaum has made available for municipal officials, zoning and planning boards, city attorneys, and others, the most comprehensive and readily consulted treatise on this vitally important subject of the law of zoning.

The first seven chapters (289 pp.) discuss the origin, progress and benefits of zoning; eminent domain; the police power; and specific legislative restrictions.

There follows chapter VIII (367 pp.) on state and federal decisions arranged in alphabetical order by state with a brief summary of each decision. Then comes chapter IX (352 pp.) on the functions, powers, and limitation of boards of zoning appeal. Next is chapter X (791 pp.) occupying almost all of Volume II, in which "practical" questions affecting zoning are presented under topical headings.

Volume III opens with a 72-page chapter on legislative powers concerning zoning. Then comes the text of the United States Supreme Court decision in the celebrated 1926 case of the *Village of Euclid et al. v. Ambler Realty Company* validating the fundamental philosophies of zoning (30 pp.).

This volume also contains in a voluminous appendix (417 pp.) the full text of the zoning ordinances of New York City, Chicago, Euclid (Ohio), and Los Angeles County, and Ohio's rural zoning enabling act. The appendix also contains numerous suggested forms for proceedings and notices of zoning boards and court procedure forms.

The last 164 pages of Volume III include a tabular index to cases (some 3,000 in number) and a very helpful detailed general index of subjects.

Supplements will be issued and sold from time to time to keep these volumes up to date.

Tax Bibliography

TAX INSTITUTE BOOKSHELF—*No. 46, June* 1955. *Tax Institute, Inc., 457 Nassau Street, Princeton, N. J. 36 pp.* $1.

Available current material on the various aspects of public finance are indexed in the quarterly issues of the Bookshelf. General public finance, taxes and other governmental revenues, expenditures, public debt, fiscal policy, intergovernmental fiscal relations, fiscal administration, and international and foreign public finance are the main categories under which material is catalogued.

Zoning in Texas

THE TEXAS CITY, ITS POWER TO ZONE—*By Stuart A. MacCorkle, Institute of Public Affairs, The University of Texas, Austin, Texas.* 1955. *24 pp.*

The law of zoning in Texas is set forth in simple terms in this brochure. Early zoning attempts and recent zoning are discussed and test cases cited. There are also sections on variances and exceptions, spot zoning, nonconforming uses, and zoning procedure in Texas.

Administrative Budget Practices

BUDGETING AND FINANCIAL MANAGEMENT—*November* 1955 *issue of* Municipal Finance. *Published by Municipal Finance Officers Association, 1313 E. 60th St., Chicago 37, Ill. 33 pp. 50 cents per copy.*

The articles in this issue are based on papers presented at the MFOA annual conference in May 1955, on the uses of budgets from a performance or program point of view, program accounting and reporting, the financial management of operating budgets, and the integration of capital with operating budgets. Case studies of performance type budgets in Maryland, Richmond, Va., and Boston are included.

Each of the contributors speaks from everyday experience, and the views expressed reflect a recognition of the need to trim and modernize the accounting, reporting, and organization of finances in local and state governments.

New Housing Directory

HOUSING AND REDEVELOPMENT DIRECTORY, 1955-1956. *National Association of Housing and Redevelopment Officials, 1313 East 60th St., Chicago 37, Ill.* 1955. *247 pp. Plus 14 p. supplement,* DIRECTORY OF OFFICIAL HOUSING IMPROVEMENT AND NEIGHBORHOOD CONSERVATION AGENCIES, 1955-1956. $3 *to NAHRO members;* $25 *to commercial users;* $5 *to schools, libraries, and the like.*

The new 1955 edition of the Directory includes 1,275 listings of which, 1,116 are listings for county and municipal housing and redevelopment-renewal agencies and 27 for federal government agencies; 5 are departments, 2 are international agencies, and 16 state agencies. The total also includes 111 unofficial housing and redevelopment renewal organizations.

Listings for 70 known agencies responsible for housing improvement programs are carried in a housing improvement supplement to the Directory.

Another new feature of the 1955 directory is the inclusion of Canadian housing agencies.

As in the past, the listings indicate the function of the organization and give such data as the name of the executive director, the date of the agency's establishment, total staff, name of chairman, etc. Late corrections were accepted to July, 1955.

Industrial Decentralization

THE PLANT, THE OFFICE AND THE CITY—PART I, INDUSTRIAL LOCATION TRENDS AND FACTORS. *Aug.-Sept.* 1955 *issue of Tax Policy.—By Mabel Walker. Published by the Tax Institute, Inc., 457 Nassau St., Princeton, N. J. 28 pp.* 50c.

Against a backdrop of prosperity, high taxes, and industrial expansion, there is great acceleration of the trend toward decentralization of industry. Dr. Walker discusses the three major types of decentralization—managerial, regional, and suburban and rural—and also the decentralization of specific industries. She then describes the factors affecting location of industry.

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Statement on Relocation

DISLOCATION, RELOCATION—THE WAY OUT. *By J. Clarence Davies, Jr., Citizens' Housing and Planning Council of New York, 20 West 40th St., New York 18, N. Y.* 1955. 14 *pp. Free.*

Speaking before the Subcommittee on Housing of the Committee on Banking and Currency of the House of Representatives, Mr. Davies presented the Citizens' Housing and Planning Council's ideas on relocation. He stated that New York must continue clearing its slums; that single persons—particularly the aged—should be eligible for federally-aided public housing, that New York City should adopt the same policy of acquiring and disposing of Title I sites as used in other cities; that FHA procedures should be speeded up; that new quarters of relocated tenants should be checked; and that the city administration should fix responsibility for maintaining housing data.

Community Activities Outlined

WHAT SOME COMMUNITIES HAVE DONE FOR THEMSELVES, *A Catalog of Community Activities. Community Adult Education, School of Education, University of Michigan, Ann Arbor, Mich.* 31 *pp.* 1951. *Single copies free.*

With the idea that communities learn from one another, this pamphlet was published to give an over-all picture of community cooperation in action. It describes community services, adult education, recreation, and youth activities, and also outlines methods of community self-surveying.

Neighborhood Road Design

INTERNAL ROAD PATTERN — RESIDENTIAL NEIGHBORHOOD. *August-September* 1955 *issue of* Ontario Planning. *Community Planning Branch, Department of Planning and Development, 454 University Ave., Toronto 2, Canada.* 10 *pp.* 25 *cents.*

The broad principles that may be applied to the road patterns of residential neighborhoods will aid the planner in reaching a suitable layout for his particular section. These include convenient access, traffic movement, simplicity of pattern, exclusion of through traffic, easing of conflict between pedestrian and vehicular traffic, etc.

First Steps for a New Planning Commission

A GUIDE FOR ORGANIZING A NEW PLANNING COMMISSION. *City Planning Division, Institute of Science and Technology, University of Arkansas, Fayetteville, Ark.* 1955. 7 *mimeo. pp.*

After a city planning commission has been appointed, it must organize for a successful planning program. The steps to be considered are election of officers and specification of duties, setting time and place and other rules of meetings, developing a work program, establishing committees, public relations, adoption of by-laws. All these steps are outlined in this Guide, which includes also sample by-laws for a new planning commission.

Chicago's Economy

THE ECONOMIC BASIS OF CHICAGO'S CREDIT—*Office of City Comptroller, Room 504, City Hall, Chicago, Ill. December* 1955. 16 *pp.*

Chicago believes that publicity about its economic and financial strength won't hurt when the time rolls around again to sell some bonds. Hence this unique booklet that has just been prepared and made available. All the necessary facts are here—employment distribution, value of manufactured products, population, bank debits and clearings, wholesale and retail trade figures, building permits, bonded debt figures, debt service data, etc. But the chief interest in this report is that the figures aren't just listed and left at that but are interpreted with a fine text and presented in a nicely illustrated booklet.

Two Booklets on Public Schools

Available from the National Citizens Commission for the Public Schools, 2 West 45th Street, New York 36, N. Y. 1955. Free.

WHAT ARE OUR SCHOOL BUILDING NEEDS? 74 *pp.*

In addition to advising on how school requirements may be estimated and financed, the booklet explores contemporary trends in school design, and guides citizen groups in other aspects of school construction planning, such as choice of building materials and choice of an architect.

WHAT SHOULD OUR SCHOOLS ACCOMPLISH? 84 *pp.*

Citizens are shown in this booklet how to study the accomplishments of their schools via a series of checklists. Several pages are given over to resumes of arguments put up by various schools of thought regarding education. This guide will help the reader determine the goals and curriculum of the public schools.

Summary of Managers' Conference

RESUME OF 41ST ANNUAL CONFERENCE SESSIONS—*International City Managers Association, 1313 East 60th St., Chicago 37, Ill.* 1955. 24 *mimeo. pp.* $2.

At the Bretton Woods, N. H., conference last Oct. 3-8, general sessions covered over-all management; current trends in finance, personnel, and planning; special interest subjects—such as relations with employee organizations, with the press, TV, and radio, performance budgeting, urban renewal and rehabilitation, the role of the manager in industrial development; and population and special group subjects. These and the business sessions are summarized in this ICMA report.

Fringe Problems

SACRAMENTO . . . A CRISIS OF GROWTH. *The Sacramento Bee, Sacramento, Calif.* 1955. 46 *pp.*

A series of 19 articles on community problems resulting from Sacramento's tremendous growth that was recently featured by *The Bee*. The fringe areas needing services are the basic problem, and the quest of these articles is whether consolidation of functions, bigger districts, merger of county and city, or annexation to the city is the best solution.

Municipal Government Text

AMERICAN CITY GOVERNMENT AND ADMINISTRATION, *6th ed. By Austin F. Macdonald. Thomas Y. Crowell Co., 432 Fourth Ave., New York 16, N. Y.* 1956. 656 *pp.* $6.50.

Since 1929 when the first edition of this book appeared, tremendous changes have taken place in municipal government. These changes have been chronicled in the succeeding editions of the text; and in the new sixth edition there have been added a chapter on municipal reform, new sections on federal-municipal relations, on the chief administrative officer, performance budgeting, civil defense, and urban renewal. The treatment of many topics, such as municipal pensions, public housing, and speed law enforcement, has been amended.

However, the basic book remains the same. It portrays the organization and work of American cities, as well as fundamental principles, and it offers standards by which various forms of municipal government may be measured. In spite of the great amount of material included, the book makes easy and pleasant reading.

For the student of municipal government there are problems at the end of each chapter, along with selected references on the subject under discussion.

Master Plan for Berkeley, Calif.

BERKELEY MASTER PLAN—1955. *Berkeley Planning Commission, Berkeley, Calif.* 1955. 111 *pp. Price: for Californians,* $1 *plus* 4c *tax; for out-of-staters,* $1.

The Planning Commission feels that because of Berkeley's scenic beauty, mild climate, and fine economic situation, the city can set the very highest goals for its future. With this idea, it presents this master plan, which is not a rigid framework but advisory in nature, the details to be filled in as projects are put into effect. Major proposals of the plan will be reviewed annually, and in addition the master plan will be thoroughly reappraised every five to seven years.

See Berkeley, Calif., Plans Expansion into San Francisco Bay, page 151 of this issue.

Economic Surveys of Two Indiana Cities

ECONOMIC FACTORS FOR PLANNING GARY—132 *pp.*

ECONOMIC FACTORS FOR PLANNING ELKHART—68 *pp.*

Prepared by Albert E. Dickens, Urban Economic Consultant, 1603 K Street NW, Washington, D. C. 1955.

Both studies analyze and measure the effects and implications of recent trends in the economic life of the two cities. They are to be used as a base for forthcoming land use studies.

A secondary purpose of each report has been to classify and correlate statistical data relating to Gary and Elkhart in order to serve a variety of local needs.

The rapid evolution of Gary and its integration with the neighboring region make it a particularly interesting subject for the economic balance sheet here presented. Elkhart, too, is related in the survey to the broader geographic and economic environments of which the city is a part.

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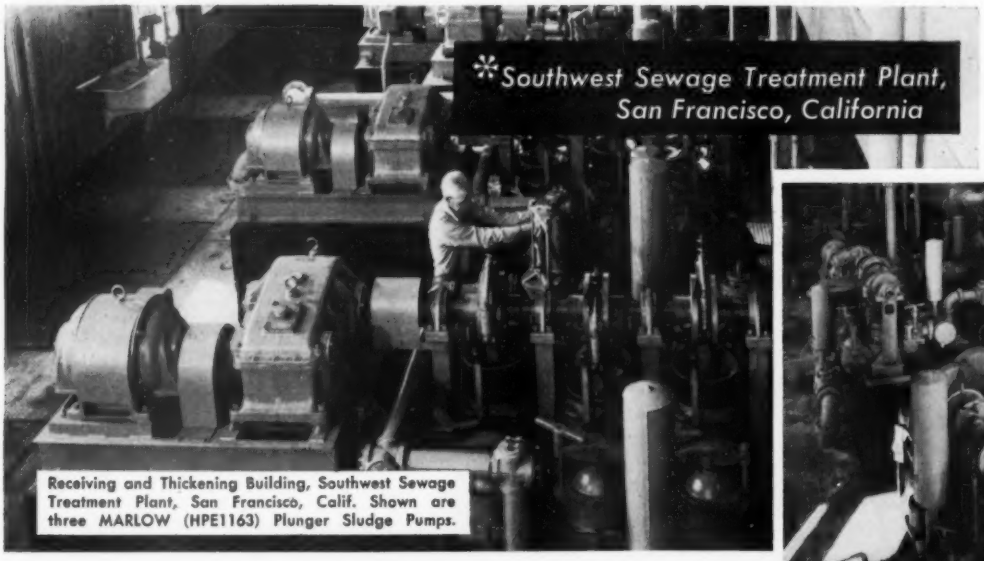
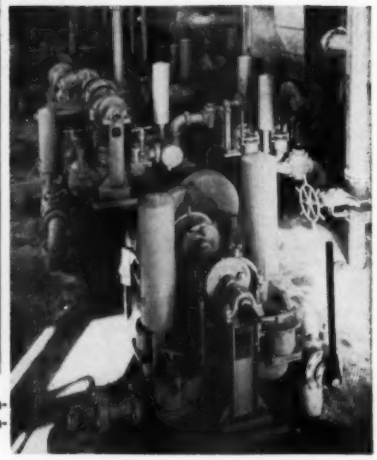


Receiving and Thickening Building, Southwest Sewage Treatment Plant, San Francisco, Calif. Shown are three MARLOW (HPE1163) Plunger Sludge Pumps.



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...23 MARLOW Plunger Sludge Pumps installed!

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. . . for re-circulating sludge in digesters and transfer of sludge between digesters.
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. . . for transfer of processed sludge from one elutriation tank to another.
. . . for transfer from final elutriation tank to vacuum filters.
. . . for transfer of raw sludge from thickening tanks to holding tanks or digesters.
. . . for re-circulation of raw sludge in holding tanks or between holding tanks and receiving and thickening tanks.

MARLOW PLUNGER SLUDGE PUMPS are available with single, double, triple and quadruple plungers. 360 to 30,000 GPH standard displacement.

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Urban Renewal Explained

URBAN RENEWAL—WHAT IT IS—*Housing and Home Finance Agency. For sale by Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.* 1955. 12 *pp.* 10 *cents.*

This pamphlet is aimed at citizen groups and organizations cooperating with urban renewal efforts in local communities. It tells how a community may combat blight by submitting its "workable program" to the HHFA in order to obtain federal assistance; how the federal aids can be used; where each person can help; and where further information may be obtained.

Attitudes of Residents in Interracial Housing

HUMAN RELATIONS IN INTERRACIAL HOUSING—*By Daniel M. Wilner, Rosabelle Price Walkley and Stuart W. Cook. University of Minnesota Press, Minneapolis 14, Minn.* 1955. 167 *pp.* $4.

The racial attitudes of people living in public, interracial housing projects in four cities are examined in this study. Based on interviews with more than 1,000 white and Negro residents in Philadelphia, Pittsburgh, Hartford and Springfield, Mass., it searches out information that would help to answer such questions as: What is the effect of Negro-white residential proximity on race relations? Does living nearby reduce or intensify prejudices? What is the nature of contacts that develop among members of the two races?

The research confirms some of the basic findings in an earlier study, *Interracial Housing*, by Deutsch and Collins, as well as providing new insights. It contains solid evidence on a subject that has been sparsely documented up to now.

Urban Renewal Program

WORKABLE PROGRAM FOR URBAN RENEWAL, KANSAS CITY, MO.—*City Plan Commission, City Hall, Kansas City 6, Mo.* 1955. 20 *pp.*

The workable program required for a community to become eligible for certain forms of financial assistance under the Federal Housing Act of 1954 is here printed as submitted by Kansas City to the Housing and Home Finance Agency. The statement describes the action already being taken by the city to solve the problem of urban blight and deterioration, as well as the program for future utilization of appropriate private and public resources to further this end.

Austin's Master Plan

CAPITOL AREA EXPANSION—*Report No. 3 of the Austin Master Plan Program. Prepared by Harold F. Wise Associates for the Austin City Planning Commission, Austin, Texas. October* 1955. 30 *pp.*

This report dealing with the state building program and development of the state capitol area is the third in a series covering various elements of the Austin Master Plan. The reports provide the basis for broad discussion of the master plan as it is being prepared, to the end that the people of Austin may participate fully in shaping planning policy for the long-range development of the city.

Public Works Spending Can Reduce But Not Cure Depressions

PUBLIC WORKS AND EMPLOYMENT FROM THE LOCAL GOVERNMENT POINT OF VIEW—*A Report of the W. E. Upjohn Institute For Community Research. By Eugene C. McKean and Harold C. Taylor. Public Administration Service, Publications Division, 1313 East 60th St., Chicago 37, Ill.* 1955. 274 *pp.* $5.

The authors of this book let most of the hot air out of the theory that during times of depression big public construction expenditures will cure a sick local or national economy. Writing from the viewpoint of municipal government officials, they dissolve the notion that local governments will be able to shift to high levels of capital spending during economic slumps. They also point out that even if this were possible, the net effect on the local economy would be negligible.

Although they acknowledge the fact that federally sponsored public construction projects will aid in curing unemployment on a national scale, Messrs. McKean and Taylor are emphatic in pointing out the minor effect such a policy can have on the over-all problem of unemployment.

Other Reports Received

Annual Reports

PASADENA, CALIF.—People, Taxes, and Government. Annual Report submitted by Don C. McMillan, City Manager. Illus. Tables. Graphs. 56 pp.

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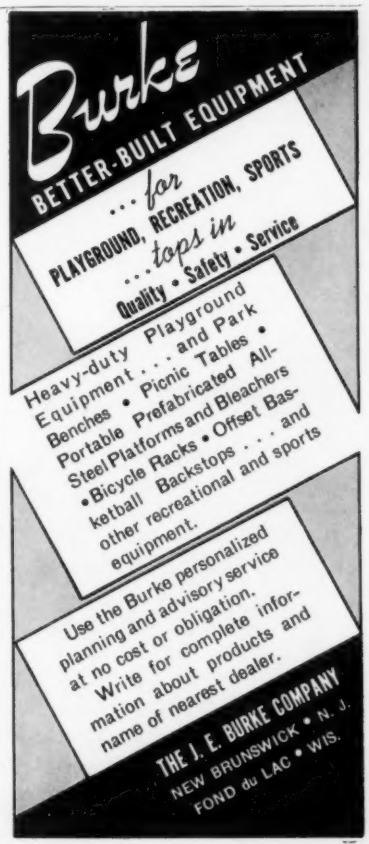
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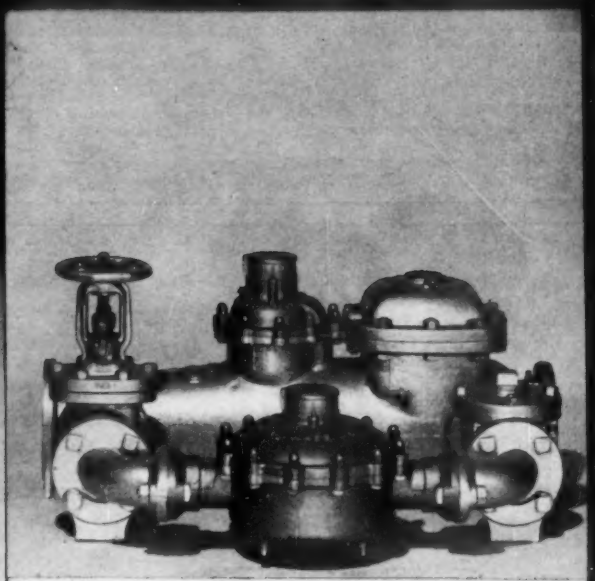

HERSEY DETECTOR (Fire Service) **METER**
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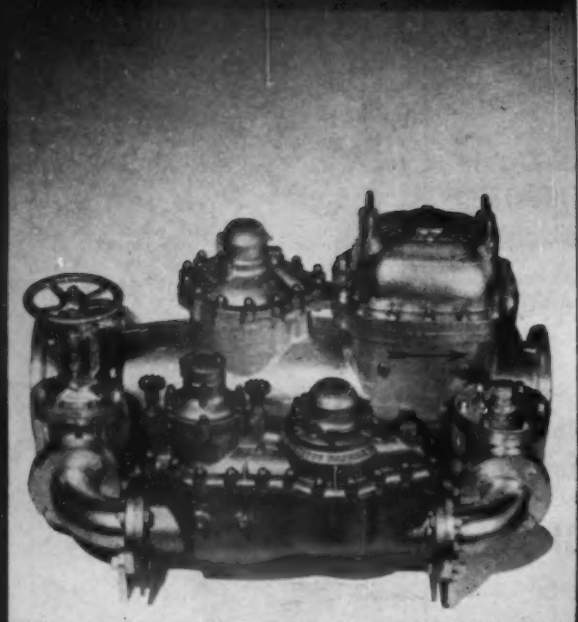

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ville Centre 1955. Prepared by Kennedy Associates, Rockville Centre. Illus. Tables. Maps. 40 pp.

Civil Defense

BOSTON, MASS.—"A Family Action Program." Published by the Department of Civil Defense, 115 Southampton St., Boston 18, Mass. Illus. 34 pp.

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COLUMBIA, MO.—Annual Budget 1955-1956. Available from Office of The City Manager, Columbia, Mo. Tables. 130 pp.

DETROIT, MICH.—Annual Report by the Auditor General, David V. Addy. Year ended June 30, 1955. Tables. 125 pp.

EAU CLAIRE, WIS.—1956 Annual Budget. Available from Office of City Manager, David D. Rowlands. Tables. 111 pp.

PASADENA, CALIF.—Annual Report of the City Controller. Submitted by O. A. Dietrich, City Controller. Illus. Tables. 55 pp.

PORTLAND, ORE.—Annual Report of the City Auditor. Year ended June 30, 1955. Submitted by Will Gibson, City Auditor. Tables. 134 pp.

SAN FRANCISCO, CALIF.—Annual Report of the Controller for the Fiscal Year ended June 30, 1955. Harry D. Ross, Controller of the City and County of San Francisco. Tables. Charts.

WASHINGTON—Report on the Financial Transactions of the Incorporated Cities and Towns of the State. Cliff Yelle, State Auditor, Division of Municipal Corporations, Olympia, Wash. Tables. 358 pp.

GENERAL—The Daily Bond Buyer. Special Convention Issue. Part Two. Published by *The Bond Buyer*, 67 Pearl St., New York, N. Y. Illus. 118 pp.

Industry and the Community

AUBURN, KY.—Industrial Resources. Prepared by Auburn Rotary Club, Chamber of Commerce and The Agricultural and Industrial Development Board of Kentucky, Frankfort, Ky. July 1955. 15 pp. plus Appendices. $2.00.

HARTFORD, KY.—Industrial Resources. Prepared by The Hartford Chamber of Commerce and The Agricultural and Industrial Development Board of Kentucky, Frankfort, Ky. April 1955. 15 pp. plus Appendices. $2.

LEXINGTON, KY. — Industrial Resources. Prepared by Lexington Chamber of Commerce and The Agricultural and Industrial Development Board of Kentucky, Frankfort, Ky. September 1955. 20 pp. Appendices. $2.

MANCHESTER, KY. — Industrial Resources. Prepared by the Clay County Chamber of Commerce and The Agricultural and Industrial Development Board of Kentucky, Frankfort, Ky. May 1955. 13 pp. plus Appendices. $2.

PARIS, KY.—Industrial Resources. Prepared by the Paris Chamber of Commerce and The Agricultural and Industrial Development Board of Kentucky, Frankfort, Ky. June 1955. Illus. 16 pp. plus Appendices. $2.

STANTON, KY.—Industrial Resources. Prepared by the Stanton Town Board and the Agricultural and Industrial Development Board of Kentucky, Frankfort, Ky. April 1955. 14 pp. plus Appendices. $2.

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CHICAGO, ILL.—Relocation Report. Office of the Housing and Redevelopment Coordinator, Chicago, Ill. Mimeo. Tables.

MANHATTAN, KANS.—Planning, Developing, Utilizing. Submitted by W. B. Avery, City Manager. Illus. Maps. 43 pp. Appendices.

SACRAMENTO, CALIF. — How Sacramento Uses Its Land. Available from City Planning Director, Glenn Hall, Room 308, City Hall. Tables. Maps. 75 cents.

——Population Growth of the City and County of Sacramento 1850-1980, November 1953. A Part of the Master Plan of the City Planning Commission, Room 308, City Hall, Sacramento, Calif. Tables. Graphs. $1.

Personnel

MISSOURI—Annual Report, 1954-1955. Mis-

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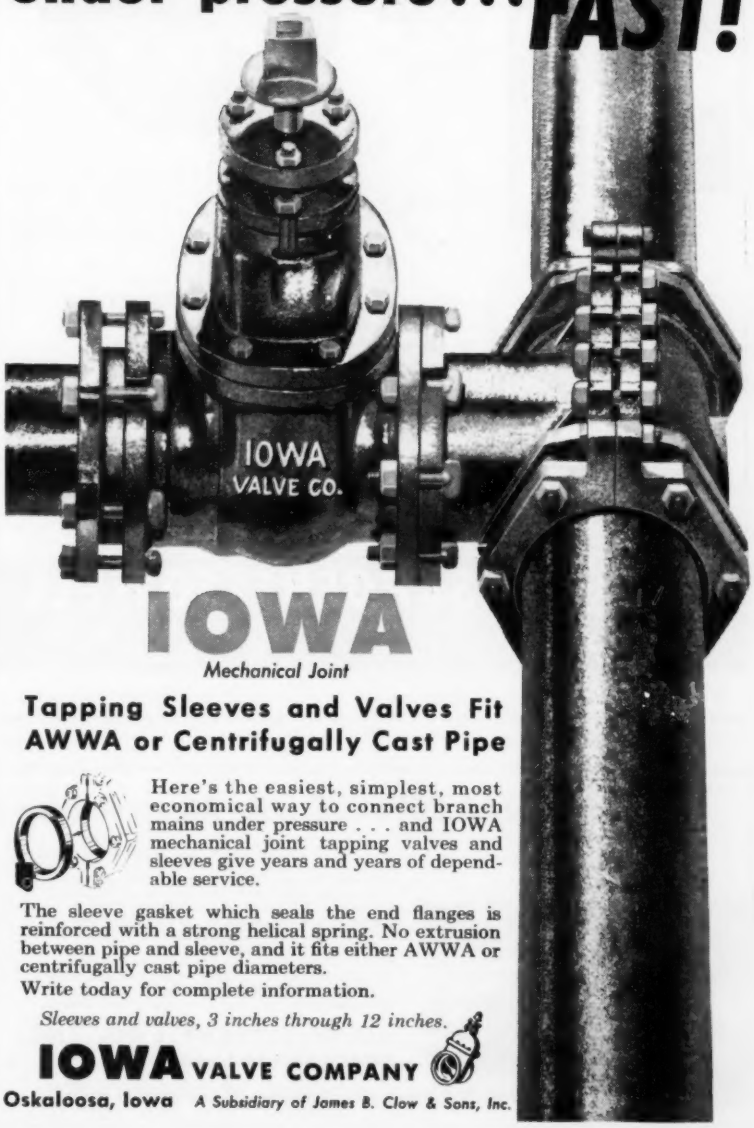

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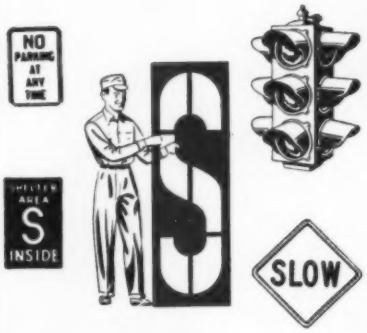

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souri Personnel Division, State Department of Business and Administration, 12th Floor, Jefferson Bldg., Jefferson City, Mo. Tables. 47 pp.

Public Works

TENNESSEE—Public Works—Advance Planning. Prepared by Tennessee State Planning Commission, C-1 Cordell Hull Bldg., Nashville 3, Tenn. 13 pp.

Recreation

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Urban Redevelopment

HONOLULU, HAWAII—Something New Under the Hawaiian Sun in Redevelopment. Published by the Honolulu Redevelopment Agency, City Hall, Honolulu 13, Hawaii. August 1955. Maps. Tables. 35 pp.

"The Best Streets—Anywhere"

(Continued from page 137)

for parking on both sides and two traffic lanes. Consequently, in areas where a 34-foot street did not seem called for, we omitted the curb.

Finish—Excellent

A wearing surface is necessary because soil cement dusts off and flakes under traffic, and because it cannot be built smooth enough for a finished street. We chose a hot-mixed, densely-graded aggregate asphalt because it produces a surface not unlike sheet asphalt. The result is a street more quiet and resistant to water penetration.

Once the blacktop is on and rolled, it is ready to use, and what a ride it gives! It is as smooth and quiet as sheet asphalt and as level as concrete.

We are very happy about our new streets. We built nearly 5,000 lineal feet of curb and gutter at an average cost of $2.23 per foot, including turns and driveway cutouts. The soil-cement base and asphalt surfacing cost a little more than $1.90 per square yard, two years ago, and dropped to $1.53 last year. We also are resurfacing much of our brick pavement with hot mix and are placing asphalt oil mat surfacing wherever it seems needed. If we continue our program for 10 more years, we can have the best streets of any city our size in—well—anywhere.

Purchasing for Dallas County

By MOORE LYNN
County Auditor
Dallas, Texas

SEVERAL hundred counties and cities in the United States have in the last several years established Standards and Specifications Committees consisting of three or four persons, including the Purchasing Agent to establish the standards and specifications for all major purchases of their governmental units. These purchases include machinery and heavy road equipment and other technical items.

Such specifications are needed in Dallas County. Their formulation should be made with the advice and cooperation of the county department, institution, or agency making the requisition. Its precise requirements should be ascertained.

Since the county is required to accept the *lowest and best bid*, it is important that the specifications be drawn correctly. A well-written, nonrestrictive specification that describes the fundamental requirements will do much to eliminate the buying of inferior materials and equipment. The easy way (*but not the best way*) is merely to specify a certain proprietary article "or equal."

Competitive Bids

To enable the county to purchase all of its commodities and supplies at the best prices, all purchases, except in extreme emergencies, should be made after receiving competitive bid quotations. Such quotations are received on open bids or specific bids. In our case, open bids are those which amount to less than $500. Since several classes of commodities are purchased from open bids, and the prices are quoted as the prices in effect at the time of sale, less certain discounts, the purchasing department should be responsible for obtaining competitive prices *at the time actual purchases are made*, either by mail or by telephone. When vendors know by experience that purchases will be made at the lowest prices on a strictly competitive basis, they will generally quote their lowest prices in order to obtain the county's volume of business.

In the case of gravel purchases, the prices for the same grade of gravel are usually the same. The county deals with about fifty bidders on gravel. It does not appear practicable under all the circumstances to buy gravel from only one bidder, or even from only one bidder in each precinct. Generally speaking, bids should be taken for a period of from three to six months.

To take advantage of past experience in purchasing supplies or equipment, records must be compiled and knowledge of how to use them must be developed. Without adequate records of past purchasing, there will be cases requiring "specifications for equipment with which the county has had no previous experience." Such specifications require considerable care and the aid of commercial literature and catalogs. The purchasing agent should also make inquiries and discuss the specifications with the county engineer, construction engineers, and other officials. It may also be advisable to call in the representatives of the equipment dealers for their comments and advice.

The Power Shovel and Crane Association could be consulted for specifications on draglines. This association has developed and set up certain standard test conditions to determine the value of dragline specifications. The Texas State Highway Department has offered its services and will send copies of its specifications for heavy road machinery and equipment on request.

Commodity and Vendors' Files

Our purchasing department maintains a card record on all major commodities purchased, and also a card file of all vendors who are on the bid lists of the county.

A commodity purchase record gives a complete history of all purchases, showing dates of purchases, requisition and purchase order numbers, vendors purchased from, quantities purchased, list prices per unit, discounts, net prices per unit, total net prices, delivery point and terms.

The second card shows the item specifications, list of approved vendors and their quotations on prices; and lists the contract or contracts in force, contract or bid number pertaining to the various commodities, date contract made, date of expiration, remarks and any other pertinent buying instructions.

The vendors' file lists all vendors who have submitted bids to the county, commodities handled by each vendor, addresses and telephone numbers, and names of persons to contact.

We have found that almost all governmental purchasing divisions maintain a vendors' file or bidders' list. Commodity card purchase records are kept by some units but not by others.

Emergency Purchasing

Emergency purchases should be defined as cases where life or property is in danger when the purchasing office is not open; and when there is a need to buy certain items from a vendor who is *not on a current bid list* and who is the *only source of supply*.

When a using agency makes any emergency purchase under the first case, it later furnishes the purchasing agent a requisition which is confirmed by the issuance of a confirming purchase order. It is made plain that a new purchase is not contemplated.

If purchases are required under the second case, the purchasing agent should make the purchase. Such purchases should be limited by a general Court Order to $25 for approval by the purchasing agent. Purchases which exceed $25 should be separately approved in advance by the Commissioners' Court.

In any large organization, supplies, material, and equipment which one department no longer considers useful may at times be profitably used by another agency within the organization. The using agencies of the county are expected to advise the purchasing agent of items they consider obsolete or surplus. By law, the county engineer is required to prepare the lists for the road and bridge precincts. From that list the purchasing agent compiles a list to be presented to the Commissioners' Court at regular intervals along with his recommendations as to disposition to be made of such items.

Because of the very nature of governmental purchasing and the generally outmoded laws on the statute books throughout the country, it has been only in recent years that the importance of this function has been recognized as one of the most important factors in proper administration.

The National Institute of Governmental Purchasing recognized this several years ago and is now making tremendous progress in all phases with the assistance of those living closest to it—your local purchasing agents.

A Technique for Skating Safety

Daily ice measurements checked against safety saves lives

By ARTHUR LELAND
Recreation Consultant
Barrington, R. I.

TO insure ice skating safety, the Newport, R. I., recreation department has recently resumed daily tests and measurements of ice conditions on local ponds. This safe skating service was initiated some years ago when the author was director of recreation in this historic New England community.

As originally devised, the service involved taking daily measurements of ice thicknesses, checking the existing and probable later temperatures for the day, and publicizing the results in the local paper together with a statement regarding the safety of the ice. A special safe-skating chart, devised by the author, was used in determining the safety of the ice.

Ice thicknesses were measured through small holes cut through the surface with a chisel, and gauging was done with a baseball base spike that had been bent over and marked at the inch and half-inch points. The tests were taken in the morning in time to relay the information to the afternoon papers before their deadlines, and the skating information was also furnished to schools, sporting goods houses, radio stations, and the U. S. Naval Base in Newport. The Navy men were particularly grateful, for they enjoyed the novelty of skating after living in the tropics or aboard ship.

She's safe on Newport's ice. Miss Judith Welch, who is Miss Canada, tries out the ice on one of Newport's ponds. Ponds are checked for skating safety by the technique described in the chart below.

Radio and television forecasts of probable minimum and maximum temperatures, modified by thermometer readings of local temperatures, together with measurements of the ice on various ponds, and all checked with the chart, gave the data necessary for a reliable ice-safety forecast.

The Record

During 25 years in which this service was performed, it was necessary only once to have the police clear the ponds when skating was declared unsafe. No drownings in a skating pond occurred during the entire period. However, during a discontinuation of the inspection service some years ago, three small children broke through the ice and were drowned in one of the ponds that had formerly been inspected every day. With the resumption of the inspections, Newport can again expect safe skating.

SAFE SKATING CHART

Based on 32 years of Ice Testing in R. I. Without an Accident

By Arthur Leland
Recreation Consultant and Landscape Architect
Barrington, R. I.

Ice Safe For	At 0° - 30°	30° - 40°	40° - 50°
Single Skaters	1 3/4 "	2 3/4 "	6 "
Couples	2 3/4 "	3 3/4 "	8 "
Crowds	3 3/4 "	4 3/4 "	12 "

Note: These figures are for clear, fresh-water ice only. For snow ice, add 2 inches; for water-logged ice, add 3 inches. If skates cut in go home. Salt-water ice in mild climates is always treacherous—Keep Away ! Also, depths in the 40°-50° column represent safe depths for short periods of time at this temperature range.

This chart is copyrighted by Arthur Leland. Permission to reprint chart has been granted by author.

Citizens Shown How to Rehabilitate Homes

BALTIMORE, ST. LOUIS, AND CLEVELAND have been demonstrating to property owners how rehabilitation can change a dilapidated dwelling into a respectable house.

The National Association of Housing and Redevelopment Officials reports that "Pilot House," a small dwelling located in an area where Baltimore concentrated its first rehabilitation efforts, was bought and repainted, repaired, and generally fixed up, as a reminder to neighboring home owners of what can be done to spruce up a blighted area. It also serves as a headquarters where citizens may come for advice and information on rehabilitation.

A corporation is being formed in St. Louis to buy two old homes in areas where the city is undertaking large-scale rehabilitation projects, and to modernize them for demonstration purposes.

Similarly, Cleveland has purchased old houses, including two run-down structures that were moved to the city's downtown mall and rehabilitated for public inspection. The project here is named "Operation Demonstrate."

Lewis Orgel, Register, New York City, checks Recordak Microfilm holding 1,400 vital records

Protecting every property owner in New York City

32 million pages of deeds, mortgages and other real estate records—dating back to 1654—are now being put on Recordak Microfilm for safekeeping

If these vital records were destroyed—and photo-exact duplicates weren't available—proving ownership would be an all but hopeless task.

Title searchers wouldn't be able to check back on 845,000 parcels of real estate valued at $18 billion. Claim after claim would be met by counterclaim.

But New York City has insured against this possibility at lowest possible cost. It's getting duplicate film records on 35mm Recordak Microfilm. Fourteen hundred pages (13 x 17 in.) on a roll that's no larger than your palm . . . and just 6 ounces light—imagine that!

One complete set of these film records will be stored for maximum security as a master copy; the other set filed for ready reference. *Extra protection property holders can well be thankful for!*

FREE . . . Valuable New Booklet

"Short Cuts That Save Millions" shows examples of how *over 100 different types of business—thousands of concerns*—are cutting record-keeping costs with Recordak Microfilming. Chances are you'll find some profitable ideas for your agency. Write Recordak Corporation (Subsidiary of Eastman Kodak Company), 444 Madison Ave., New York 22, N.Y.

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originator of modern microfilming —and its application to government routines

"Recordak" is a trade-mark

New Recordak Reliant does job of 3 microfilmers. Saves film . . . is easier to operate

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The following is taken verbatim from the official journal of one of our largest cities, a city large enough to encounter every type of sanitation problem:

"A preference survey was made of our Sanitation men and officers with these results (each man submitted a signed report):

	FOR COMPACTOR UNIT	FOR ESCALATOR-COMPACTOR UNIT
1. Which type hopper lends itself to less spillage on the streets in the process of loading?	89	4,332
2. Which truck presents the least offensive condition during loading from a sanitary point (odors, manhandling materials, etc.)?	27	4,394
3. Which truck is easier to load?	18	4,403
4. Which type do you prefer to load?	26	4,395
Officers were asked:		
5. Which type do you perfer for all around production and performance?	0	523

The overwhelming majority of our officers, who are responsible for production, and the laboring forces have thus stated, in writing, that they prefer the escalator type from their day-in day-out experiences."

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HIGHEST NUMBER OF LOADS PER SHIFT
GREATEST TONNAGE COLLECTED PER DAY
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LOWEST COST PER CUBIC YARD COLLECTED

MAKE US PROVE TO YOUR SATISFACTION THAT THE ROTO-PAC CAN ALSO SAVE MONEY FOR YOUR COMMUNITY!

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SALES AND SERVICE IN ALL PRINCIPAL CITIES

Community Forests Yield Important Benefits

FREDERICKSBURG, VA., owns a forest that has put the city into the pulp wood business. Loblolly pines planted 20 years ago on a 110-acre city-owned tract are yielding their first harvest, which is expected to gross over $5,000. City Forester N. C. Sharp says that the forest should be ready for a second pulp wood cutting in about five years. Meanwhile an open spot in the forest is being prepared for part of a new nursery where the city will grow its own stock for streets and parks.

Nearly 3,300 communities in the United States are reaping the benefits of growing their own forests, says Peter Farb in an article published in the *Town Journal* and reprinted in the *Reader's Digest*. These benefits include harvests of valuable timber, beautification of the town's outskirts, control of erosion and floods, and attractive areas for outdoor recreation.

Town and city forests range in size from a five-acre tract in Arkansas to Seattle's 67,000-acre watershed forest. The forests are usually established on undesirable or blighted land, so that tax loss is negligible.

Wisconsin has an extensive community-forest program that includes state aid (notably fire protection). This is backed by a nonprofit venture of the paper and power industries, Trees for Tommorow, Inc., and has resulted in the planting of 10,000,000 seedlings.

Boston Salutes The Eternal City

RECENTLY, Boston held a week-long salute to Rome, Italy. The program was arranged by the Greater Boston Chamber of Commerce with the endorsement of the State Department, as part of the American effort to counteract Soviet propaganda.

The Eternal City's mayor, Salvatore Rebecchini, and Mrs. Rebecchini were guests in Boston at the various events. Among prominent Italians participating in the program were Goffredo Petrassi, the composer, who was present at the premiere of his Fifth Concerto played by the Boston Symphony Orchestra, and Professor Paola Rossi, Italy's Minister of Public Instruction.

Mayor John B. Hynes of Boston opened the ceremonies at a breakfast he gave in honor of the Mayor of Rome at the Sheraton Plaza. Tufts, Harvard, Smith, Northeastern University, Massachusetts Institute of Technology, Simmons College, and Boston College were among the educational institutions participating in the festivities, while the Jordan Marsh Company, Wm. Filene's Sons Company, and the First National Bank of Boston represented local business.

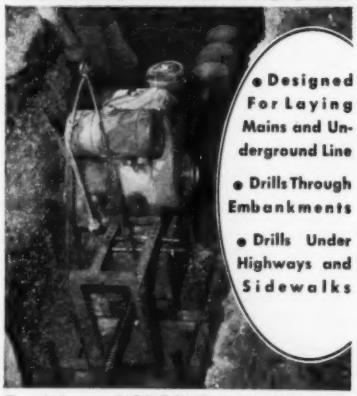
Italian art and music were highlighted in the programs, some of which were televised for presentation to the Italian Government and to the Vatican.

Reappraisal— Key to a modern Assessment system

(Continued from page 148)

correct depreciation to use on properties that do not have recent selling prices. During and after the reappraisal, every sale in the city should be posted on the appraisal card and a *Sales-assessment ratio* calculated, if the appraisal is completed. (The sales-assessment ratio is the percentage relationship existing between the selling price and the

Do A Better Job *FASTER* with the NEW Prewitt HORIZONTAL DIGGER



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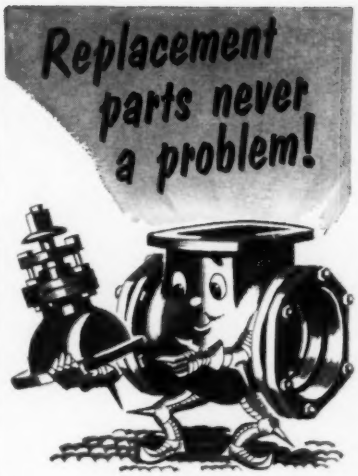

Backed by more than 100 years of successful operations, Eddy Valve Company has always maintained interchangeability of repair parts. That's one of many reasons why thoughtful, "look-ahead" engineers and purchasing agents specify . . .

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- Only 3 moving parts.
- Even new employees without special training can service and maintain any Eddy Valve.
- Available with standard or "O"-Ring packing.
- Furnished with bell, flange or mechanical joint connections to fit any existing or planned installation.
- 105 years of successful operations assure availability of repair parts.
- Conform to all A.W.W.A specifications.

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WATERFORD, NEW YORK

Commissioner of Public Works Watson and Street Commissioner Switzer inspect sewer cleaning equipment.

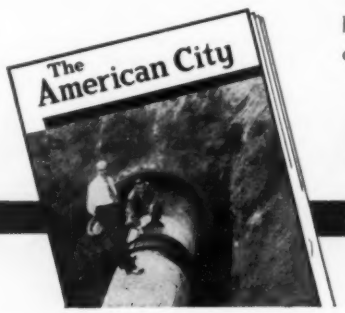
Quality Counts When Huntington Selects Municipal Equipment

Does a city always have to accept the "lowest bid"? Not in most states, and the Huntington, Indiana (pop. 15,079) story is evidence.

When Commissioner of Public Works Gordon L. Watson needs equipment, his purchasing recommendations have to be approved by a board consisting of the Mayor, City Attorney, and himself. Advertisements for bids are published and sent to the manufacturers. "The award is made only after a comparative analysis of quality, durability, and the kind of service the equipment will render," says Commissioner Watson. "Price is considered, of course, but it can never be the only factor. Many manufacturers have convinced us of the superiority of their products, making a higher price well justified."

GORDON L. WATSON

Commissioner Watson (he's also City Engineer and Water Works Superintendent) has been a regular reader of THE AMERICAN CITY since 1933, and he keeps his eyes open for equipment that will prove to be in the taxpayers' interest. Your message about quality will be seen by men like Mr. Watson, if you invest your advertising dollars in THE AMERICAN CITY.



The American City

470 Fourth Avenue, New York 16, N. Y.

assessed value. If this percentage is uniform for all of the sales, then it is assumed that the assessments are correct.)

The cards are now ready for the final inspection. The Assessor takes the cards and reinspects the exterior of the properties. As each house is inspected the card is reviewed and the appraised value is compared with the values placed on neighboring and similar properties. If the value appears to be equitable, the appraisal is accepted as completed. If the value is not correct the changes are indicated on the card and the card is tabbed for recalculation. This final inspection makes for uniformity of values.

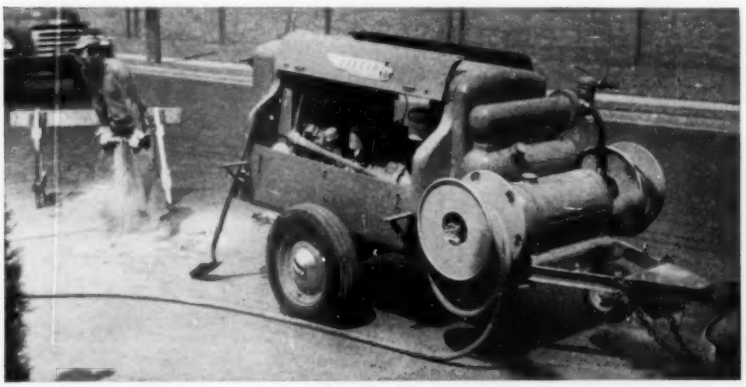
The total of the appraised value of land and improvement is the value of the property. This value is the basis of the assessment. The assessments can be any uniform percentage of the appraised values that will keep the local assessments in line with other assessment jurisdictions.

Public Reaction

Public reaction to a reappraisal program goes through several distinct phases, and city officials should be aware of these moods so that they can deal properly with the protests of the taxpayers. These reactions are normal and are to be expected.

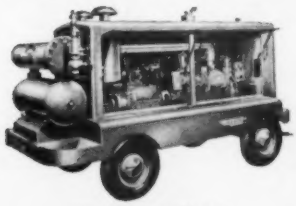
When the program is first announced, there is generally a public opposition because of a genuine fear of much higher taxes. This is followed by a calm, wait-and-see period. The posting of the assessment rolls produces a mixed reaction. Those who receive a lower assessment or one that is not materially higher generally are pleased. Those who receive the increases naturally are unhappy, and a good percentage of them demand, as is their right, a complete review of their new assessment. The next reaction takes place when the first taxes, based on the new assessment, are paid. The number of taxpayers who are extremely dissatisfied with the program then dwindles to a very small minority, because the taxes were not as high as expected. After a few years practically none will want to go back to the old hit-and-miss system, because most realize, even though taxes may be higher, that they are being treated fairly.

It is worth while noting that no jurisdiction has thrown out a well administered assessment system once it has been set-up and accepted by the public.



Note full size tool boxes, retractable dolly, spring towing eye.

Work moves faster with a Jaeger Rotary



Other sizes to 600 cfm

At slower operating speeds than other rotaries (less fuel, less wear) the Jaeger "125" gives your crews constant 100 lbs. pressure for all demands up to 125 cfm. Keeps full wallop in two 80 lb. breakers. Ask your Jaeger distributor to show you how quietly and evenly it runs — or send for Catalog JCR5.

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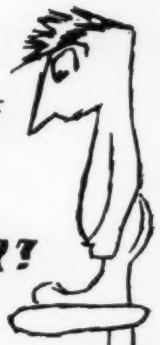
PUMPS • MIXERS • TRUCK MIXERS • SPREADERS, FINISHERS • LOADERS

is EXPERIENCE the best TEACHER?



For some animals maybe, but for some humans, psychologists think not. To profit from experience, ability to evaluate is necessary, and some humans have this essential trait, but it's slightly out of whack.

History is full of stories of the vocal early minority who were agin' the steamboat, the electric light, and just recently, atom splitting. Some of those who scoffed at the idea that mold could produce a substance like penicillin to kill disease bacteria, owe their lives to the persistence of others.

Take off your blinders and examine BIONETIC*. The first new rational improvement in sewage treatment in fifty years. Not a cure all, BIONETIC is FIRST AID TO WASTE TREATMENT and works to improve sewage processes by stimulating various biological factors.

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There's no better adding machine than the Remington Rand All-Electric.
It has everything!
• 10 key keyboard for touch control
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• Electrified multiplication
• Direct subtraction
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DIVISION OF SPERRY RAND CORPORATION

Conventions— When and Where

(Continued from page 179)

***April 26-28—Victoria, B. C.**
AMERICAN WATER WORKS ASSOCIATION—Pacific Northwest Section. Annual Meeting (Empress Hotel). Sec.-Treas., Fred D. Jones, 306 City Hall, Spokane, Wash.

May 6-11—St. Louis, Mo.
AMERICAN WATER WORKS ASSOCIATION. Diamond Jubilee Conference. Sec., Harry E. Jordan, 521 Fifth Ave., New York, N. Y.

May 7-9—Providence, R. I.
AMERICAN INSTITUTE OF PLANNERS. Annual Meeting (Sheraton-Biltmore). Exec. Dir., Perry L. Norton, 34 Brattle St., Cambridge 38, Mass.

***May 8-10—Washington, D. C.**
NATIONAL HIGHWAY USERS CONFERENCE. Biennial Highway Transportation Congress (Mayflower Hotel). Dir., Arthur C. Butler, 966 National Press Bldg., Washing 4, D. C.

May 10-11—Yakima, Wash.
ASSOCIATION OF WASHINGTON CITIES. Annual Meeting (Chinook Hotel). Exec. Sec., Chester Biesen, 250 Smith Hall, University of Washington, Seattle 5, Wash.

***May 15-17—West Lafayette, Ind.**
INDUSTRIAL WASTE UTILIZATION CONFERENCE (Purdue Memorial Union). Exec. Sec., Don E. Bloodgood, Professor of Sanitary Engineering, School of Civil Engineering, Purdue University, W. Lafayette, Ind.

***May 20-25—St. Louis, Mo.**
NATIONAL CONFERENCE OF SOCIAL WORK. Annual Meeting (Hotels Jefferson and Statler). Exec. Sec., Joe R. Hoffer, 22 W. Gay St., Columbus 15, Ohio.

May 21-24—Buffalo, N. Y.
AIR POLLUTION CONTROL ASSOCIATION. Annual Meeting (Statler Hotel). Exec. Sec., H. C. Ballman, 4400 Fifth Ave., Pittsburgh 13, Pa.

May 22-25—New Orleans, La.
NATIONAL INSTITUTE OF MUNICIPAL CLERKS. Annual Meeting (Roosevelt Hotel). Pres., Arthur J. Shinners, Brookline 47, Mass.

June 3-7—Washington, D. C.
MUNICIPAL FINANCE OFFICERS ASSOCIATION OF THE UNITED STATES AND CANADA. Annual Conference (Statler Hotel). Exec-Dir., Joseph F. Clark, 1313 E. 60th St., Chicago 37, Ill.

***June 4-8—Boston, Mass.**
NATIONAL FIRE PROTECTION ASSOCIATION. Annual Meeting (Hotel Statler). Asst. Gen. Mgr., Charles S. Morgan, 60 Batterymarch St., Boston 10, Mass.

***Oct. 8-11—Los Angeles, Calif.**
FEDERATION OF SEWAGE AND INDUSTRIAL WASTES ASSOCIATIONS. Annual Convention (Hotel Statler). Exec. Sec.—Editor, Ralph E. Fuhrman, 325-26 Illinois Bldg., Champaign, Ill.

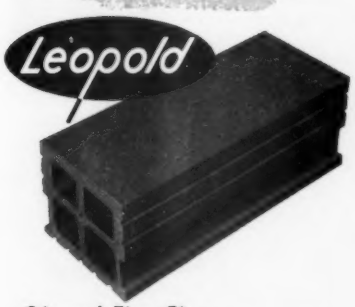
***Oct. 9-12—Atlanta, Ga.**
UNITED STATES CIVIL DEFENSE COUNCIL. Annual Conference (Biltmore Hotel). Sec.—Exhibit Mgr., George F. Arnold, 181 S. Washington Blvd., Columbus, Ohio.

***Oct. 15-17—Rye, N. Y.**
GOVERNMENT RESEARCH ASSOCIATION. Annual Conference (Westchester Country Club). Sec., Elsie V. Haas, 684 Park Ave., New York 21, N. Y.

***Jan. 28-Feb. 2—Chicago, Ill.**
AMERICAN ROAD BUILDERS' ASSOCIATION. Annual Convention and Road Show (Chicago Amphitheater). For further information address the ARBA, World Center Bldg., Washington 6, D. C.

PROVED PERFORMANCE

in over 300 plants with a daily capacity of 1¾ billion gallons...



Glazed Fire Clay
TILE FILTER BOTTOMS

Leopold Duplex Filter Bottoms are getting more popular every day. And for good reasons, too. They last longer, perform better, and are unequalled in economy. Want more details on this "performance-proved" filter bottom? Write us today. No obligation.

F. B. LEOPOLD CO., INC.
2413 W. Carson Street, Pittsburgh 4, Pa.

TWO PIECE
sliding or screw type cast iron valve boxes for covering 4" thru 10" valves for water or gas. Rugged construction for lifetime service. 5¼" shaft. Extensions as required.

Adjustable VALVE BOXES THREE PIECE

valve boxes supplied with separate bases are available in sliding or screw type. Made with 5¼" and 7" shafts with extensions as required. Complete line of service and roadway boxes.

ALABAMA PIPE CO.

We Invite Inquires to Our Nearest Sales Office
120 S. Michigan Ave. / 350 Fifth Avenue
Chicago, Illinois / New York 1, New York
General Sales Offices
ANNISTON, ALABAMA

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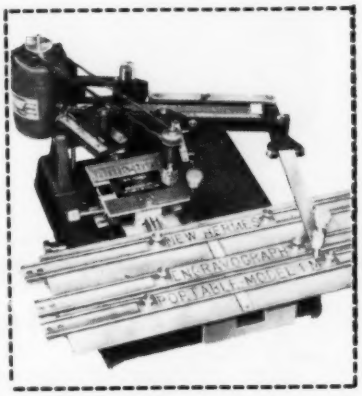
engrave your own signs

MARKERS
NAMEPLATES
right on the premises



Portable machine, so simple to operate by anyone

- Make permanent attractive signs at less cost.
- Engrave on plastics, wood or metals.
- Tested and approved by City Departments.

For complete information write Dept. 87

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ENGRAVING MACHINE CORPORATION
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The Trend Is To B&B

For The Best . . . Buy B & B

"PENTEFOLD" R-A-X
FIRE ALARM
SWITCHBOARD

Manufactured by

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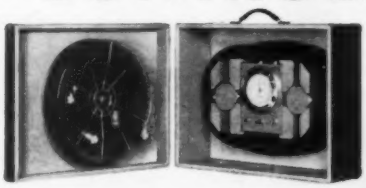
TRAFFIC TIMER---
The Newest in Accurate
SPEED CONTROL!

STOP SPEEDING!

Promote CAUTION among drivers!

Drive accident CURVE downward!



Traffic - Timer is self-contained in a lightweight fitted case for easy carrying. Cables wind on built-in free running reel with handle. Times traffic in either direction; one-way operation needs only one man. Large dial for easy reading; lighted for night operation. Switch provides selectivity of vehicle to be timed. Powered by battery or car cigar lighter. 60 ft. road tubes. Signs available which will make motorists of your city more safety conscious.

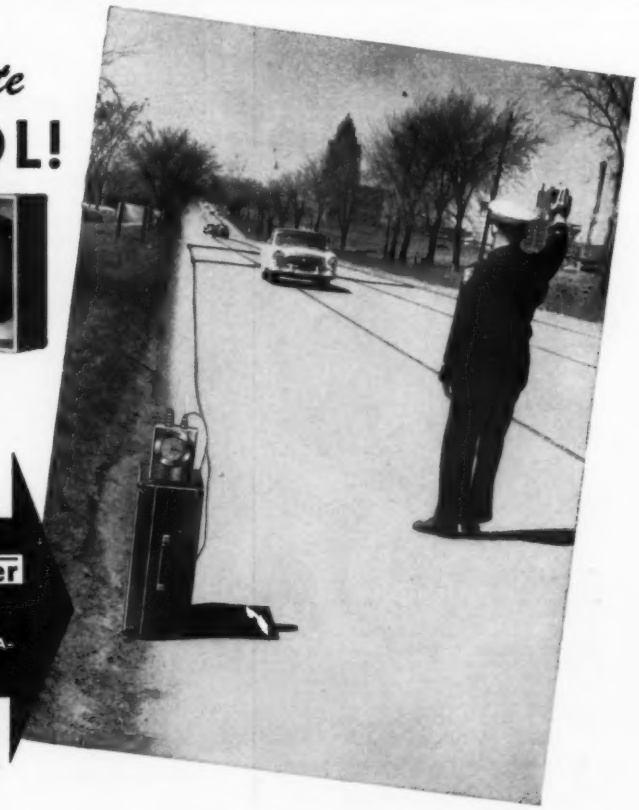
Traffic Timer
SAFETY CONTROL

ENGINEERED WITH ALL THE FEATURES NECESSARY FOR EFFECTIVE SPEED CONTROL

MUNI-QUIP CORP.

1451 W. Decatur Decatur, Ill.

Write for descriptive literature.



Catalogs for You

Write directly to the manufacturers or use Post Card at P. 52

Water Softening Simplified

302 All widely used types of ion exchangers—from natural greensands to specialized resins—may be obtained from THE PERMUTIT CO., DEPT. AC-2, 330 W. 42nd ST., NEW YORK 36, N. Y. The firm offers municipalities an integrated water conditioning service including water analysis, engineering, equipment, controls and ion exchange material. Details on request.

Mercury Street Lamps Give More Light

303 High-intensity street lighting is assured with improved Westinghouse mercury lamps. These lamps provide an increased light output to start with, and maintain this high output throughout their long life. They are fully discussed in literature from LAMP DIV., WESTINGHOUSE ELECTRIC CO., DEPT. AC-2, BLOOMFIELD, N. J.

These Parking Meters Cost Less to Maintain

304 A Duncan-Miller "60" parking meter offers servicemen easy access to all internal mechanisms for fast, low-cost maintenance and repair. These economical units are accurate and dependable, assuring full meter revenues. They are fully described in literature from the DUNCAN PARKING METER CORP., 835 N. WOOD ST., CHICAGO 22, ILL.

Traffic Cones

305 During emergency street repair or the traffic rush hour, keep vehicles rolling with efficient Safe-T-Cones. These all-rubber traffic guides, furnished in 18- and 28-inch sizes, guide traffic safely through congested areas. They are available, painted or reflectorized, from the RADIATOR SPECIALTY CO., CHARLOTTE, N. C.

Special Application Typewriter

306 Billing, statistical and report typing, which require the frequent return to either of two different left-hand margins, can be handled by a margin stop on the new Remington electric typewriter. An illustrated bulletin sheet describing the special-application machine, X-1244, may be obtained from the REMINGTON RAND DIV., SPERRY RAND CORP., 315 FOURTH AVE., NEW YORK 10, N. Y.

Steel Pipe for Water and Sewage Lines

307 Water and sewage lines of Bethlehem tar-enameled steel pipe wear longer, won't rust or corrode, and assure dependable, leakproof service. The pipe is available in easy-to-install 40-foot lengths, and in a wide range of inside diameters from 18 inches to the largest permitted by common carriers. For full facts, write the BETHLEHEM STEEL CO., BETHLEHEM, PA.

For Tapping Water Mains Under Pressure

308 You don't have to interrupt water service when you connect branch mains with Eddy mechanical joint tapping valves and sleeves. Both sleeves and valves are easily assembled in minutes, using only a ratchet wrench. There is no need to close valves or shut off mains. For full information, write the EDDY VALVE CO., Waterford, N. Y.

Sherman Digger-Loader "The Most Economical Device Our City Owns"

—Mr. Raymond Hadley,
Supt. of Maintenance, LaGrange, Georgia

Mr. Hadley's enthusiastic endorsement of the Sherman Digger-Loader combination has a basis in fact! In one two-week period, his men excavated for laying 100 feet of 24″ concrete pipe, 400 feet of 15″ concrete pipe, helped keep streets in top shape by keeping the patching trucks loaded with material, dug bellholes and did general clean-up work and repairs . . . amply demonstrating the versatility of this thrifty combination, and offering proved economies to the city of LaGrange.

The Sherman Power Digger digs as deep as ten feet in mud, hardpan, shale, oiled roads, blacktop and stony roads. Both the Digger and the Sherman Front End Loader are designed to work hard with a minimum of maintenance. The Loader is available in two models . . . with bucket capacity up to 2,500 pounds and breakaway capacity up to 4,500 pounds. You can save *your* city money, too. See your local Ford Tractor Dealer today for a demonstration or write for free Bulletin No. 1029

*Designed, Engineered and Manufactured Jointly by Sherman Products, Inc., Royal Oak, Michigan. Wain-Roy Corporation, Hubbardston, Mass.

Patent No. 2-303-852
Other Patents Pending

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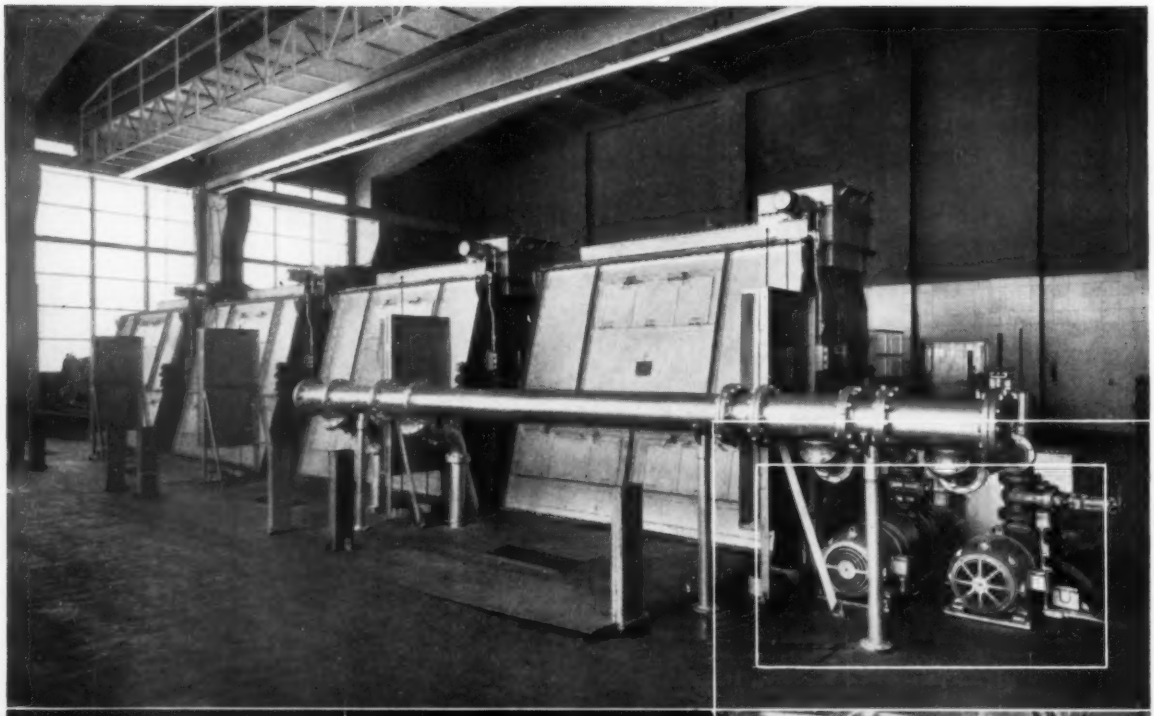
Sherman
PRODUCTS, INC.
ROYAL OAK, MICHIGAN
POWER DIGGERS* • FRONT END LOADERS • FORK LIFTS



General view of screen room at Hyperion with Type S Screens at left and Disintegrators at right.

Screenings Handling Made Easy at Los Angeles Hyperion...

Closeup of Disintegrators. Units were added to existing screening installation without expensive structural alterations.

The modern combination of Dorrco Bar Screen-Dorrco Sulzer Disintegrator is paying real dividends at Los Angeles' mammoth Hyperion Treatment Plant. The initial Disintegrator was installed late in 1953 to operate in "closed-circuit" with four Type S Bar Screens. For approximately eighteen months this one unit ground all screenings from an average flow of 249 MGD! A second unit has since been installed to serve as standby.

Essentially a low-lift, axial flow pump, the Disintegrator produces a mealy product which is returned to the plant flow without affecting subsequent treatment steps. A separate pump draws sewage from behind the bar screens and flushes screenings through a covered trough into the grinder. Wear results have been good in view of the considerable amount of grit contained in the screenings; periodic inspection and blade replacement have held maintenance costs to a minimum.

If you'd like more information on this modern answer to the screenings handling problem, write for a copy of Bulletin No. 6400. Dorr-Oliver Incorporated, Stamford, Connecticut.

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Purchasing News

Information for officials interested in equipment and services for the construction, operation and maintenance of municipal utilities

Lining Saves Failing Drainage Structures

By W. T. ADAMS, Construction Engineer
Armco Drainage & Metal Products, Inc.

When existing drainage structures show signs of weakness or need strengthening to handle heavier loads, it is often possible to salvage the existing structure by lining it with new material. Flexible-type corrugated metal structures are commonly used for such lining. The selection of the shape of the lining and the type of material to use depends on how much the existing opening can be reduced, the additional strength needed in the lining, foundation conditions, and the space available at the site.

A careful survey should be made of the existing structure to determine its exact size and shape. It is necessary to know the cross-section of the existing opening at all limiting points, the alignment of the structure with respect to its centerline, whether projecting parts of the existing structure can be removed, foundation conditions, and the load carrying capacity of the stream bed.

Existing pipe and arches are generally lined with structures of the same shape, but smaller in size. Rectangular openings can be lined with round, elliptical or pipe-arch structures, depending on the permissible reduction in opening.

An arch-type lining requires an adequate foundation, particularly if it is to carry a portion of the load on the structure. The new foundation can be benched into or set on the old one, or, it may be necessary to provide new footings. Pipe and pipe-arch shapes are self-supporting and may overcome inadequate foundations in the existing structure, if the stream bed is stable.

When space is available, the lining structure can be assembled outside of the old culvert and skidded into place. Where the clearance between the old and new material is small, and no space is available at the ends, it is necessary to use a tunnel-liner type of material which permits the assembly to be done from the inside of the structure.

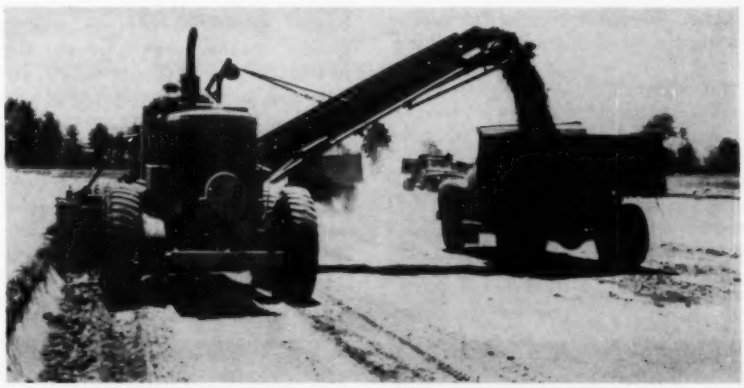
Many relining jobs require not only salvaging of the existing structure, but also lengthening it to provide for grade changes or additional roadway. In these cases, the material will serve as a lining for the old structure and as a new culvert on the projecting ends.

Backfill between the lining and the existing structure is extremely important and must be carefully done. Sand, weak sand-cement grout, a rich grout or concrete mix can all be used. The kind of backfill to use depends on the type of structure, the area to be filled and, to some degree, on the equipment available.

Lining requires a careful survey of the existing structure and surrounding conditions, selection of the material best adapted to the conditions, and careful placement of the backfill material. Such care will pay substantial dividends. Many old structures have been economically rehabilitated by lining with new culvert material.

A more detailed analysis of lining procedures may be obtained from ARMCO DRAINAGE & METAL PRODUCTS, INC., 3246 CURTIS STREET, MIDDLETOWN, OHIO. *Write directly, or you may use the Post Card on the insert following Page* 52. *Circle No.* 842.

LeTourneau-Westinghouse to Offer Elegrader



A tandem outrigger increases the stability of the 27-foot Elegrader.

The Reisser Elegrader, a well-known motor grader attachment, is the latest addition to the LeTourneau-Westinghouse line of earthmoving equipment. The company recently agreed to purchase the entire output of the Reisser Corp., Blair, Nebr. The dependable attachment will be used with the Model 550, 610 and 660 motor graders made by the Adams Division of LeTourneau - Westinghouse, and with the No. 12 grader made by the Caterpillar Mfg. Co.

Designed to extend the usefulness of these motor graders, the Elegrader transforms the standard, one-man operated unit into an efficient tool for loading, casting, terracing, ditching, widening and stripping operations. When mounted on the Adams 660 grader, it will handle up to 1,500 cubic yards of material an hour on side casting assignments. In addition, it will load trucks or other hauling units at a consistent 12-yard-per-minute clip.

A complete description of the Elegrader may be obtained from LE-TOURNEAU-WESTINGHOUSE CO., PEORIA, ILL. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 825.

THE BUFFALO-SPRINGFIELD K-45 KOMPACTOR

How to select compaction equipment

The logical question to ask yourself when you are ready to buy new compaction equipment is: "Exactly what do I need the equipment for and how will I use it?"

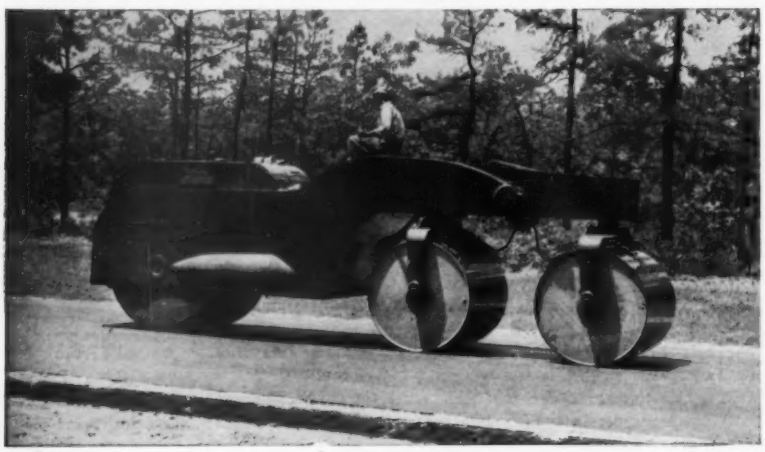
BASE FILL COMPACTION—This type of compaction demands equipment that will handle a wide variety of materials, give you the highest degree of compaction with the fewest passes. Buffalo-Springfield's revolutionary K-45 Kompactor is proving a real money-making answer for this type of work. It is self-propelled, relies on the "Interrupted Pressure Principle." All compaction effort is directed downward. Contractors testify they are meeting density requirements in one-fourth the time normally required with other compaction equipment.

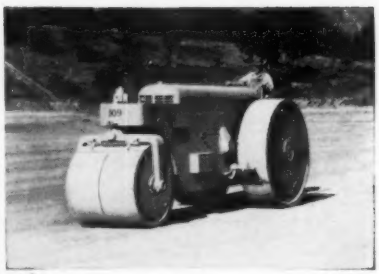
FINE GRADE FINISHING—Buffalo-Springfield offers six 3-wheel rollers, ranging in capacity from 5 to 15 tons, to handle the large variety of materials found in fills, subgrades and unfinished bituminous pavements. The variable-weight 3-wheel roller is ruggedly built for years and years of hard, maintenance-free work.

Buffalo-Springfield's thoroughly-proved 3-axle tandem "walking beam" roller provides up to 60% greater tonnage compacted per day in superhighway construction, airport and military establishment jobs where specifications are extra strict.

ASPHALT FINISHING—Two-axle Tandem Rollers are designed especially for all surface finishing jobs. Ranging from 5 to 16 tons, Buffalo-Springfield Tandems are used for heavy-duty highway and public works projects, and all types of finishing, maintenance and repair work. A wide selection of models for the biggest to the smallest jobs are designed for long-life and profitable operation.

THE BUFFALO-SPRINGFIELD KX-3 AXLE TANDEM





3-WHEEL ROLLERS

TWO AXLE TANDEMS

SHORT ROLLING JOBS—Buffalo-Springfield's 3-5 ton portable roller is widely used for rolling driveways, sidewalks, parking and playground areas, and for patching and light finishing jobs. It is highly maneuverable and portable from job-to-job. Write today for full information on the type of equipment you need—or see your nearest distributor for an on-the-job demonstration.

3-5 TON PORTABLE TANDEM

The Standard *of Comparison*

BUFFALO SPRINGFIELD

SPRINGFIELD, OHIO

Purchasing

Accurate Water Analysis in A Hurry

Water analysis is fast, easy and economical with the Field Monitor, a new development incorporating the MF Millipore Filter membrane. With this device, it is no longer necessary to make a lengthy test for pathogenic bacteria. Instead, one device, the Field Monitoring Kit, contains all the required presterilized, expendable elements for routine bacteriological water tests.

The new kit permits taking a sample of water and immediately putting it through a membrane filter that removes any bacteria. The inspector can then place the filter with the trapped bacteria in a small, portable incubator where they can grow to a size visible to the naked eye in 16 to 20 hours. This gives a quicker and also a more accurate test than older methods.

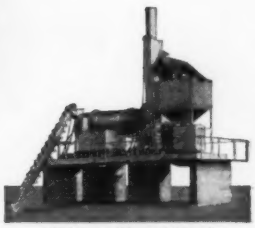
A detailed description of the new Field Monitor Kit and how it aids water bacteriological control, is contained in literature from the MILLIPORE FILTER CORP., WATERTOWN 72, MASS. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 817.

Air Force Orders New Runway Sweeper

To combat the growing hazards of metal and other heavy objects on airstrips and runways, the U. S. Air Force has ordered the development of a new kind of sweeper. The contract for its research and development has been awarded to the WAYNE MFG. CO., 1219 LEXINGTON ST., POMONA, CALIF., and work is scheduled for completion in about six months.

The new sweeper, reports the Wayne Mfg. Co., will operate without brushes or brooms, sweeping at speeds never before possible. It will pick up heavy objects quickly and economically, saving millions of dollars in plane damage.

White



PORTABLE ASPHALT PLANT

MODEL L-8, 10-15 TON CAPACITY

Stationary Plants L-12 and L-25, 15-30 ton capacity.

A COMPLETE ASPHALT PLANT ON ONE CHASSIS . . . DRYER, MIXER, HEATING KETTLE. Low in cost, small enough to tow, BIG enough to produce HOT mix, (or any other bituminous mix) for driveways, parking lots, street maintenance, etc. Equipped with 50 HP LeRoi engine, air operated gates for *one* man control, divided compartment, reciprocating feeder for proportioning aggregate. Available as stationary plant with 30 HP electric motor.

Write for catalog and name of nearest dealer.

White MANUFACTURING COMPANY

ELKHART 1, INDIANA

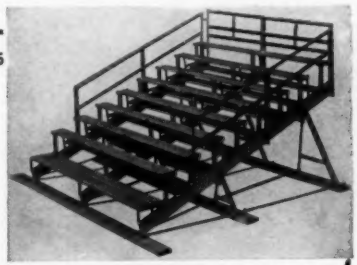
Hussey SAFE SEATING

Ironworkers Since 1835

PORTABLE SEATING

With Hussey Patented Portable Steel Bleachers and Grandstands, one set of seats will take care of both your indoor and outdoor needs. They cannot collapse and can be erected and taken down faster and easier than any other stand on the market. Low in cost. 6, 10 and 15-tier 12' sections in stock. Others to order.

NEW! Ask about the new, space-saving, all-enclosed deck Hussey "ROLL-OUT" GYM SEATS.



Single Section—Model 8 Grandstand

Write for FREE catalogs on all Hussey products

Hussey Mfg. Co., Inc. • 566 R.R. Ave. • North Berwick, Me.

Also Mfrs. of Water Sports Equipment, Sectional Adjustable Landing Piers, etc.

modern GIVES YOU SO MUCH more...

IN SWIMMING POOL SUPPLIES

Modern manufactures over 100 top-quality products — including filters, fittings, vacuum cleaners, pool paint, algae preventives, diving boards—for every swimming pool need. Modern offers more know-how, more value, greater dependability—thanks to a large, experienced staff. Huge stocks and regional warehouses assure fast shipment. Low prices save you money.

FREE!

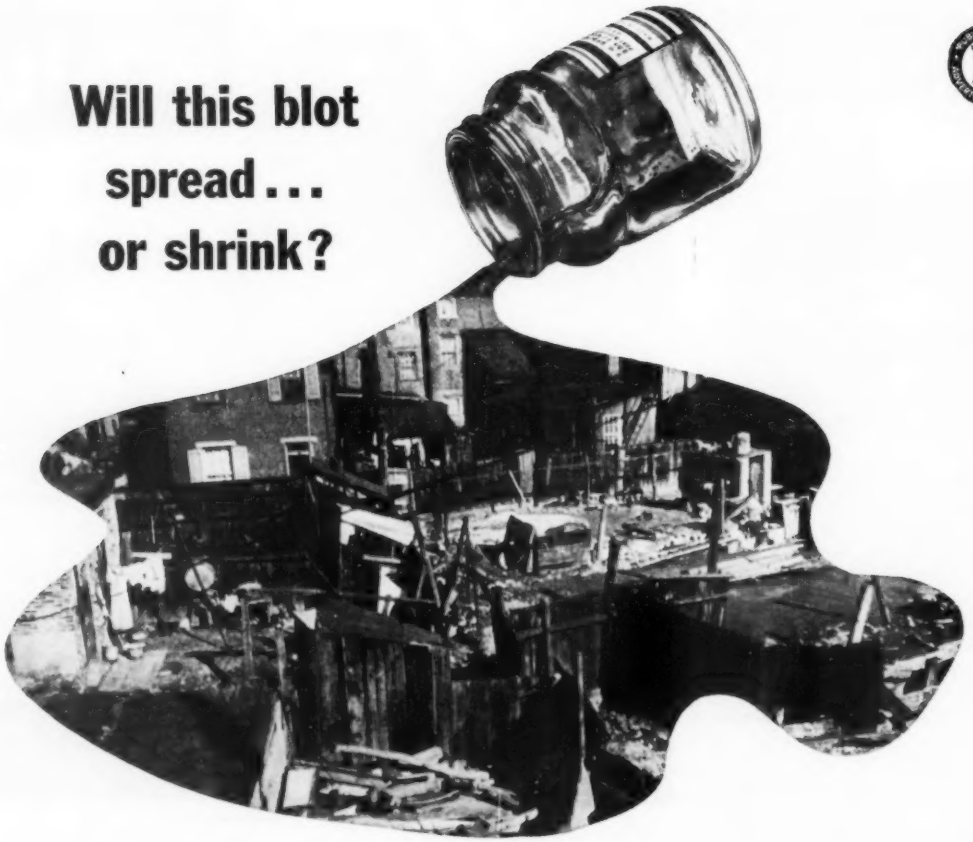
modern SWIMMING POOL CO., INC.

One Holland Avenue, White Plains, N. Y.

Manufacturers of Swimming Pool Supplies Since 1935

Send today for big Catalog No. 12-P

Will this blot spread... or shrink?



NOTHING STRIKES so brutally at human lives as a slum.

Yet of America's many millions of homes, the blot that is a slum covers more than 1 out of every 10 . . . and nearly one-half of all our homes are urgently in need of repair and basic improvements.

Will the blot go on spreading? Or will a concerted, nationwide attack on the causes of slums shrink it, year by year, until it is wiped out? Today, this is a challenge to every American . . . a challenge that *must* be met.

Your community . . . your problem!

A slum reaches across blocks, across miles, to sit on your doorstep and demand a price.

You pay it in the threat of crime and juvenile delinquency to your family. You pay the price in higher personal property taxes to fight the disease and crime and poverty that are slum-bred. You pay personally when the value of your home sinks as community deterioration takes another step closer.

Your *firm* pays when the community where you do business goes downhill. Slums automatically mean lower purchasing power and less effective labor.

Good citizenship is good business

It's good citizenship and good business both for your firm to join efforts to check housing decay . . . to stop slums before they start. In fact, it's the *responsibility* of every business, as it is of every other good citizen, to support community improvement efforts.

Some slums are beyond repair. They should be torn down and a fresh start made. Others can be remodeled, made to conform to better living standards. So it is up to you to get behind every sound program which seeks to provide adequate housing for all our people.

Adding your support to the efforts of the millions already attacking the problem, your firm can help stop slums cold and put America's housing standards at a new height.

How to get into action

A group of Americans from every walk of life has formed a new, non-profit organization to help combat home and community deterioration – The American Council To Improve Our Neighborhoods . . . A.C.T.I.O.N.

Send for a free copy of "ACTION." It explains what A.C.T.I.O.N. is and proposes to do. It also lists booklets, research reports, check-lists, and other material which can help you protect the housing health of your community. Address P. O. Box 500, Radio City Station, New York 20, N. Y.

ACTION

American **C**ouncil **T**o **I**mprove **O**ur **N**eighborhoods

Economical Way to Burn Piles of Green Wood

If conditions are right, cities can take a tip from professional land-clearing crews and use the No. 75 Rotomist for difficult burning operations. The Rotomist, originally developed to spray shade trees, will do a fast, efficient job of burning piles of green wood. It is particularly useful in clearing reservoir sites and other locations where water may be encountered.

A recent demonstration of the No. 75 Rotomist was held at the Nacimiento Dam site, 38 miles north of Paso Robles, Calif. Within a few hours a pile of green sycamore, oak and pine, 50 feet in diameter and 20 feet high, was reduced to ashes. Some of the trees were over three feet thick.

One man handled the entire burning operation. The Rotomist blew 20,000 cubic feet of air a minute to a distance of 125 feet. A nozzling arrangement introduced oil droplets throughout this column of air, whenever the operator desired. Thus, he was able to apply the fuel right with the draft.

This high pile of green sycamore, oak and pine, 50 feet in diameter and 20 feet high, is quickly reduced to ashes with a No. 75 Rotomist.

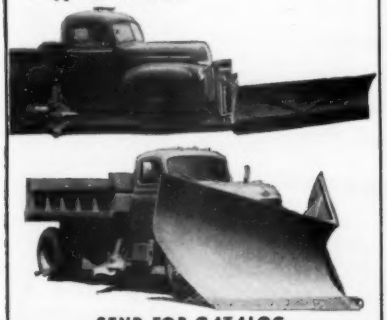
A high-pressure pump, working through a hand line and a triggered flame-thrower, enabled the operator to start the fire and circle the wood pile on foot. He applied flame where it was needed while the blower was at work providing draft to the fire.

A detailed description of the Rotomist may be obtained from the JOHN BEAN DIVISION, FOOD MACHINERY AND CHEMICAL CORP., SAN JOSE, CALIF. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 822.

Unbeatable Combination!

- **Root Underbody Scraper**
- **Root Sno-Plow**

The underbody scraper is efficient, economical, year-round equipment for street, alley, parking lot maintenance, snow and ice removal, etc. Root Sno-Plows for faster, better snow removal. 25 models of one-way tripping and V-type Sno-Plows.

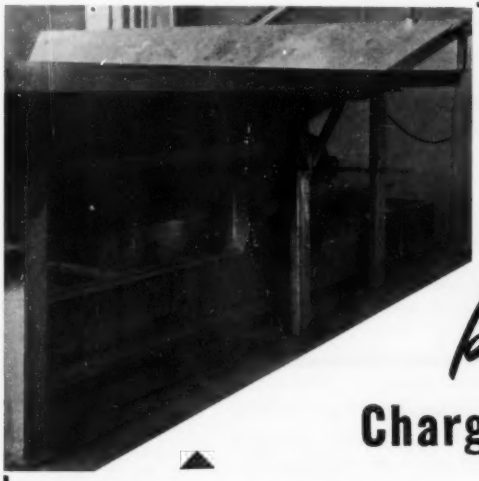


SEND FOR CATALOG

Better Road Machinery Since 1891

ROOT SPRING SCRAPER CO. GET TO THE ROOT OF THE PROBLEM

545 WEST NORTH ST., KALAMAZOO, MICH.



ANOTHER ADVANCEMENT USING *Beaumont*

Charging Gates

Charging Gates installed on Morse Boulger furnaces at Babylon, L. I., N. Y. designed by Henry W. Taylor for maximum access, and ease of maintenance.

Send for descriptive literature and sizes available.

Beaumont also manufactures Ash Gates, Ash Residue Conveyors, Dried and Incinerated Sewage Sludge Conveying, Coal and Ash Handling Equipment.

BEAUMONT BIRCH CO.

1508 Race St., Philadelphia 2, Pa.

2 fast, economical M-B LINE MARKERS

LOW COST, COMPACT MODEL 6-18. Built for the county with limited marking requirements — an easily handled, 18 gallon capacity machine with features usually found only in higher priced markers. The Model 6-18 marks curved lines as easily as straight — solid or intermittent with regular or reflective paint. Heavy duty paint guns have jet spray tubes laying sharp lines 3" to 6" in width. Travels 3 to 5 miles per hour; built-in riding trailer provided.

With all these big-unit features, the M-B Model 6-18 is easily the most handy marker on the market today.

HEAVY-DUTY, HIGH PRODUCTION SUPER 10. One man can handle any highway marking need with this self-propelled M-B Super 10 marker. Lays one, two or three lines, 2" to 6" wide, in 2 colors — solid or intermittent. Bead dispensers available. Large paint capacity — up to 120 gallons. Powerful 14 hp engine gives travel speeds up to 10 MPH. Three speeds forward and one reverse. Telescopic wheel-type caster guide assures accuracy — jet spray tubes guarantee sharp, clean lines.

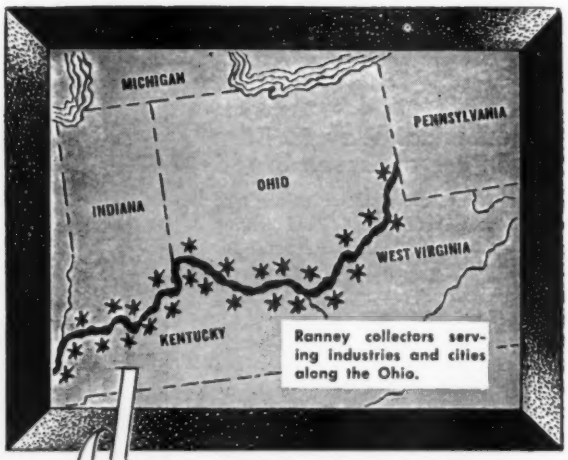
All M-B Line Markers feature the largest strainers available — up to 180 sq. inches; standard make guns; positive paint agitation with paddle-type agitators; and largest standard tank capacities — from 11.2 gallons to 1,000 gallons.

SEE THE COMPLETE LINE of big production M-B Markers and special "made to order" truck-mounted models — they meet every highway department requirement! Send for free catalog today.

M-B CORPORATION
NEW HOLSTEIN, WIS.

PACKER BODIES • LINE MARKERS • SWEEPERS • PAINTS AND BEADS

MANUFACTURERS OF QUALITY MUNICIPAL AND CONSTRUCTION EQUIPMENT SINCE 1907



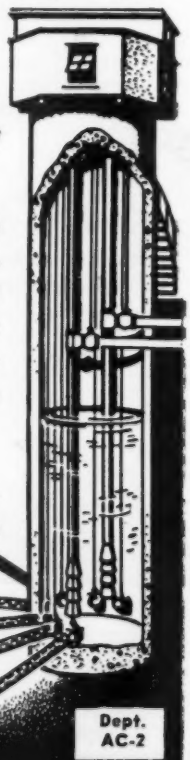
Dipping our fingers in the Ohio!

208.8 MILLION GALLONS PER DAY

Here is more proof that the RANNEY METHOD is the most effective, economical means of collecting huge volumes of naturally filtered, non-turbid water.

43 collectors, representing 9 chemical plants, 2 distilleries, 2 Ordnance Plants, 1 Steel Company, and 3 Municipal Water Supplies, are now producing an abundant water supply by infiltration. Results here, as in so many areas, are highly satisfactory.

Take advantage of this low-cost insurance against water shortage problems, without the expense of filter plants and treatment stations.



Dept. AC-2

RANNEY METHOD

Water Supplies Inc.

Water Supply Engineers and Contractors

841 Alton Columbus 19, Ohio

Associate: Ranney Method Western Corporation

Purchasing

Surveying Instruments Star In New 16mm Film

The Last Word in Surveying Instruments, a new 16mm optical sound motion picture from Kern Instruments, Inc., gives you an inside view of instruments at work in airports, railways, highways and hydroelectric plants, as well as atop the highest peaks of the Swiss Alps.

The film opens with a short historical glance at Switzerland's period of technical and economic pioneering, and continues with a review of the progress made by Kern & Co. Ltd., in Aarau, Switzerland. The Swiss firm, specializing in the manufacture of geodetic and optical instruments, will soon celebrate its 150th anniversary.

Surveyors, city engineers, and others interested in a showing of the new film, may obtain it, without cost, from KERN INSTRUMENTS, INC., 120 GRAND ST., WHITE PLAINS, N. Y. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 838.

Opens New Engineering and Research Firm

Harry J. Seaman

A new firm, the Seaman Engineering and Research Corp., has been established by Harry J. Seaman, founder of Seaman Motors, Inc., and inventor of the well-known Seaman Pulvi-Mixer and Seaman rotary type soil tillers. The new company will have its headquarters in Milwaukee, Wis.

According to Mr. Seaman, the firm will pursue the further study of soil stabilization and related mechanization. As head of the company, he will devote his knowledge of soil mechanics to the design and development of new types of road building equipment.

KOHLER Electric Plants

• • • portable, on-the-job power that cuts work time

MODEL 1.5M25, *1500 watts, 115 volt AC. Manual starting. 2500 watt AC portable models also available.*

Move jobs faster with your own compact portable power plant. Low-cost model operates grass shears, hedge trimmers, chain saws for pruning and for cutting fallen trees after storms, carpenters' saws, drills, electric spades, pipe threaders and cutters.

Other models, 500 watts to 35 KW, for trucks, street repairs, police and fire departments, civil defense units. Automatic stand-by models for emergency service in hospitals, schools, sewage and filtration plants, and for communications, when central station service fails. Write for folder T-8.

Kohler Co., Kohler, Wisconsin. Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

CLT

Tax Equalization Appraisals

Fifteen years of unduplicated experience of producing highest quality appraisals for tax equalization purposes.

Client list and brochure upon request.

COLE-LAYER-TRUMBLE COMPANY

11 West Monument Ave. • Dayton 2, Ohio

PROVABLE APPRAISALS SINCE 1938

DISTRICT OFFICES:

172 Clinton Avenue, New Rochelle, New York
207 Investment Building, Pittsburgh, Pennsylvania
123 N. Poplar Street, Charlotte, North Carolina
415 Congress Street, Portland, Maine
84 Peachtree Street, N.W., Atlanta, Georgia

One man with "Handyman D" makes a complete dirtmoving crew!

The "Handyman D" is a 138 hp, 2-wheel, rubber-tired prime-mover coupled to an electric-control scraper of 7½ yards heaped capacity. Introduced in 1948, this machine has proved dependable and economical on more than 2500 earthmoving installations.

"D" loads itself, or can be push-loaded for production dirtmoving. It loads, hauls and spreads earth and other materials at low cost over long or short distances. Equipped with 8-ft. dozer blade, it also push-loads, clears land, backfills, removes snow, does other miscellaneous dozing.

Drives job-to-job

You don't need a truck-and-trailer to haul "D" to its assignments. There are no loading or unloading delays. The D Tournapull "runs" to the job via streets, highways, or cross-country, at speeds to 28 mph. Operator can drive rig out to work in the morning, bring it back to the shop at the end of the shift if desired.

Handles wide variety of jobs

One "D Handyman" does grading, ditching, clearing, fills washouts, widens shoulders, builds access roads, handles land-fill garbage, stockpiles coal, loads, hauls, and spreads from sand and gravel pits, removes snow, etc. Versatility makes "D" economical on many kinds of work often done with special tools.

From back-sloping to ditching, grading or clearing, the do-it-all "D" saves money wherever it goes. "D's" self-load, push-load each other, or combine in fleets with tractor or grader pushers for production dirtmoving.

Out-produces other earthmoving combinations

Working speeds are faster, and operation is more flexible than with shovel-and-trucks or crawlers-and-scrapers. Traction and flotation are adequate to meet any footing conditions encountered. Exclusive power-transfer differential applies up to four times the pull to wheel on firmest footing; enables "D" to work in mud, sand, snow, and ice where no trucks could go.

Full 90° turns

Electric power steer, full 90° turn, excellent visibility, enable "D" to work in restricted quarters and on narrow fills. Machine maneuvers fast anywhere.

Interchangeable equipment

Scraper interchanges with other haul units . . . rear-dump, flat-bed, 10-ton lift-and-carry-crane, winch-and-arch for skidding poles, logs, and pipes. Dozer blade and snow-plow attachments available. It is easy to keep D Tournapull busy. Try a D Tournapull . . . find out about this one-man dirtmover.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-956-G-z

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

Purchasing

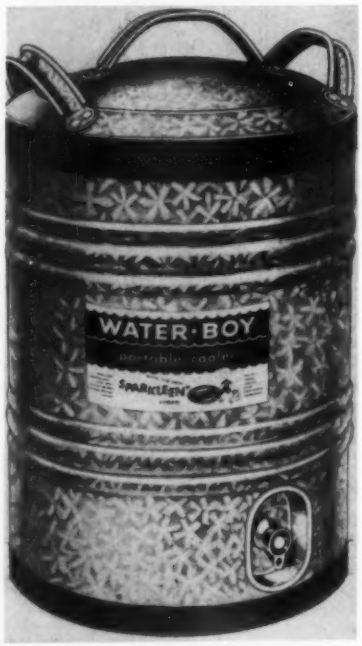
Add New Air Compressor to "Blue Brute" Line

With the addition of a new 210-cfm portable rotary compressor, the Portable Compressor and Contractor's Tool Division of the Worthington Corp. has announced the availability of a complete new line of modernized Blue Brute air compressors. The line includes 125-, 210-, 315- and 600-cfm units.

The new 210-cfm compressor is said to incorporate the same basic features and engineering advancements as the company's other machines. It features a newly-designed clutch, and a separate oil reservoir equipped with a pre-heater. All parts are easily accessible for quick maintenance, and the gravity-draining design of the cylinders prevents "lock" and the danger of oil accumulation.

A full description of the Blue Brute compressor line may be obtained from the WORTHINGTON CORP., PORTABLE COMPRESSOR AND CONTRACTOR'S TOOL DIV., HARRISON, N. J. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 837.

Work Crews Get Cool, Clear Drinking Water



Keep municipal work crews on the job by supplying them with cool, clear drinking water, kept sparkling clean by Water-Boy portable coolers. These coolers and cans are equipped with a special Spark-

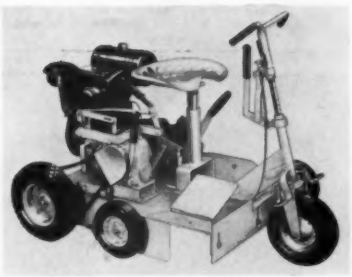
leen liner enabling you to serve hot or cold beverages. The liner is reported completely non-toxic, and keeps liquids free of all tastes and odors.

Water Boy coolers feature riveted ears and handles, a recessed faucet, double-locked seams and bottoms, corrugated sides, and a large insulation space. The hot-dipped galvanized inset won't rust or leak, and the special inset support cannot be moved.

In 2- and 3-gallon sizes, Water Boy cans and coolers are equipped with bails, and in 5- and 10-gallon sizes they feature handles. All models are available with or without faucets. The heavy-duty coolers are made with metal lugs for paper cup dispensers.

A detailed description of the new portable coolers may be obtained from the SCHLUETER MFG. CO., 4616 N. BROADWAY, ST. LOUIS 7, MO. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 810.

Riding Mower Speeds Park Maintenance



Wherever large lawn areas must be maintained—in parks, playgrounds and public golf courses—the Devere Lawn Cruiser will do the job for you quickly and economically. This heavy-duty riding mower combines a full 32-inch cut with easy maneuverability. Its front discharge permits the rapid and complete discharge of cut grass, without clumping or bunching.

Like all Devere mowers, the Lawn Cruiser features the Suction-Lift Rotary Scythe cutting principle, which lifts the blades of grass, then shears them uniformly. Matted down spots and wheel tracks are avoided. Further, the mower climbs hills easily, and operates effortlessly in rough terrain.

A detailed description of this efficient lawn mower may be obtained from the DEVERE CO., RACINE, WIS. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 821.

Landfill garbage disposal speeded by Tournatractor

Dirt from next disposal trench is dozed over compacted refuse. Tournatractor's blade carries 2½ cu. yds. of material.

Many American cities have solved their refuse disposal problems with sanitary landfill. This system eliminates odors, flies, and rat breeding opportunities and requires less equipment with lower operating costs than other methods of garbage disposal. On a long-term basis, it fills worthless land to convert it into valuable real estate.

On sanitary landfill work, LeTourneau-Westinghouse rubber-tired equipment has a big advantage over other machines.

With Tournatractor, for instance, you can use dozer blade or towed scraper to dig a trench. No shovel or trucks needed. No slow-moving crawlers. One man and one machine can do the complete trenching job.

For covering, Tournatractor also works alone to doze truck-hauled garbage into the trench, and to put on the desired layer of stockpiled dirt. If sufficient cover earth is not available nearby, Tournatractor's 19 mph speeds make practical long-distance dozing or hauling of cover. Because of this speed, job figures show that Tournatractor will do the landfill job 2 to 3 times faster than crawlers of comparable size.

Tournatractor spreads truck-dumped garbage ...solidly compacts refuse and cover dirt during normal travel over the trench.

Extra time may be used to handle scattered maintenance-type jobs or to move to another dump. Tournatractor drives anywhere at a moment's notice ... does not damage concrete or blacktop. With Tournatractor, you drive safely through traffic ... can get to a job 2 miles away in 5 to 10 minutes.

If you have a garbage disposal problem, ask your local Distributor for all the facts on the landfill method of refuse disposal. He will gladly help you plan a program that will get rid of the unsanitary conditions of an open dump, and, at the same time, give your community improved land which can be used for recreation, or be profitably returned to the tax roll through sale to private owners. Your local banker can probably help you set up a municipal corporation to finance this plan, so that you need not draw on current operating funds.

If you would like to see Tournatractor in action, your LeTourneau-Westinghouse Distributor will also be happy to arrange a demonstration for you.

Tournatractor—Trademark Reg. U.S. Pat. Off. T-239-G-zzw

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

easier to

MOW and TILL

Midland Rider with gang mowers take 60" cut.

...Do 25 Jobs in All with MIDLAND RIDER

Midland Rider with tiller mulches 22" swath.

Good news for cities and towns! Low-cost 5 h.p. Midland Rider mows as much as 12 acres of lawn in eight hour day. Yet mowing is so effortless when operator *rides*, you get maximum production from man-hours you pay for. The same is true when operator switches to tilling. Operator *still rides* and relaxes on Riding Tiller. Other attachments for unit boost jobs *well done* to 25 including weed cutting, snow plowing and bulldozing.

Unit features include auto-type differential, gearshift transmission, rugged heavy-duty design, many others. Send for details about all models . . . and for name of dealer, today!

THE MIDLAND CO.
South Milwaukee 16, Wisconsin

Purchasing

New, Low-Cost Shovels Are High in Performance

New "Quick-Way" 100 is a ½-yard, 10-ton unit capable of a variety of city jobs.

Four new truck-mounted shovels are announced by W. H. Madden, executive vice-president of the "QUICK-WAY" TRUCK SHOVEL CO., DEPT. 126—2401 E. 40TH AVE., DENVER 5, COL. These include a 5-ton, ¼-yard model; an 8-ton, ⅜-yard model; a 10-ton, ½-yard shovel; and a 12½-ton, heavy-duty ½-yard unit. All are easily converted to a trench hoe, crane, dragline, clamshell, pile driver, or magnet, for a variety of city jobs.

In addition to its new line of truck-mounted shovels, the company is offering five new carriers for all of the new "Quick-Way" units. These are being designed with heavy-duty specifications and specific capacities.

Each new "Quick-Way" model features a power up and down boom, anti-friction bearings on all high-speed continuous rotating shafts, all chain and sprocket drive, and heat hardened hook rollers and roller path. Also air-cooled clutch and brake drums, a positive hydraulic system and clutch controls, and a comfortable, ventilated, full-vision cab.

Detailed information on all "Quick-Way" units may be obtained directly from the manufacturer, or you may use the Post Card on the insert following Page 52. Circle No. 814.

Ends Dust Problems in Chemical Feeders

Now you can eliminate dust nuisance at chemical feeder installations with these new Omega dust collectors. The collector prevents dust from escaping when filling hoppers, chutes, bucket elevators or screw conveyors. Here is how it works:

An Omega dust collector is mounted directly over the bin, chute or hopper that is being filled. When the filling is completed, the fan is turned off, and the dust collected inside the bags will fall by gravity back into the hopper.

The standardized dust collectors may also be wall-mounted or mounted on a

Wherever you are the job is easily done with Katolight Portable POWER

60 cycles A.C.

Equipped with Isolators Receptacles and Carrying Handles

SPEEDS UP WORK . . . CUTS COSTS!

Wherever the job takes you, power is readily and easily available with a Katolight Portable Power Plant. Operates saws, hammers, manhole heaters, floodlights, pumps and other tools and equipment.

Model above generates 115 volt alternating current, 60 cycles. Other AC models from 350 watts to 50 KW. DC Models to 15 KW.

CHAIN TREE SAWS

MANHOLE HEATERS

FIRES

STANDBY POWER PLANTS

Whatever your municipal departments need, you'll find a Katolight generating unit up to 400 KW.

WRITE FOR DETAILS

Katolight CORPORATION

Box 891-25 Mankato, Minnesota

UNDERGROUND PIPING JOBS DONE IN LESS TIME AT LOWER COSTS

Here's the quick, simple way to install pipe under streets, walks, tracks, floors and lawns. With a GREENLEE Pipe Pusher *one man* pushes pipe *under* obstacles. No rearing up concrete, lawns, floors. Eliminates extensive ditching . . . no tedious tunneling, back-filling, repaving. Cuts job time to a fraction . . . GREENLEE Pipe Pusher often pays for itself on first job. Get facts today.

GREENLEE

Greenlee Tool Co., 2022 Columbia Ave., Rockford, Ill.

floor stand. The units are then equipped with a dust box to catch the dust from the filter bags, with a duct connecting the collector to the point of dust pick-up.

Omega collectors are available in two sizes, each with low speed (1,725 rpm) or high speed (3,450 rpm) fans to accommodate a variety of applications.

Bulletin 70-G1 provides a detailed description of the new dust collectors. For your copy, write the OMEGA MACHINE CO., 358 HARRIS AVE., PROVIDENCE, R. I., or you may use the Post Card on the insert following Page 52. Circle No. 830.

A Mechanical Breather

When police and firemen are confronted with drownings, suffocations, and other cases requiring artificial respiration, they can depend on the Revivatator to pull the patient through. This efficient mechanical breather weighs only 19 pounds, and will care for two patients at the same time. It is available from THE REVIVATATOR CO., DENRIKE BLDG., VERMONT AVE. AND "K" ST., NW., WASHINGTON 5, D. C.

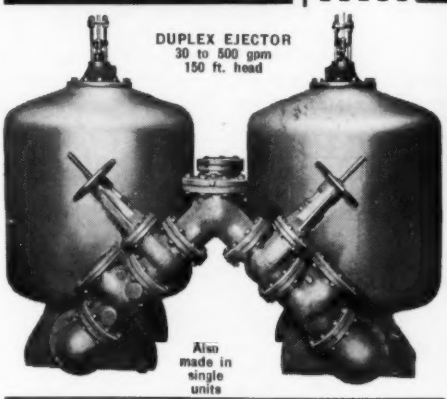
The new Revivatator is available with an aspirator and a special temperature control attachment. The aspirator will not interfere with artificial respiration treatment. The heat control attachment can be used to run the air up to 105° on the inside of the shield covering the vital organs of the body. This is especially important when treating shock cases, drownings and electrocutions.

Here, the aspirator attachment is used to bring the patient around.

Further details on the mechanical breather may be obtained directly from the manufacturer, or you may use the Post Card on the insert following Page 52. Circle No. 841.

Today's Facts on Modern **SEWAGE EJECTION**

Blackburn-Smith Mfg. Co., Inc.
57 Garden Street, Hoboken, N. J.
I want to know how I can get better sewage ejection at lower cost.
Name.....
Company.....
Address.....
.....



Features of BLACKBURN-SMITH EJECTORS
Switches operated automatically by float and electrical controls.
Snap-action valve controlled automatically, pneumatically and by float. Electrode controls.
Compact . . . motor compressor assembly and controls in "one package" unit.
Steel construction. Welded steel pots.
Simple piping for air, water.
No clogging screens, impellers, shredders.
No messy pump cleaning. Sanitary.
Unfailing, dependable operation.

BULLETIN S-50
for look-ahead municipal engineers

Get the facts you want on how to eliminate costly, complex piping for air and water, messy, unsanitary screens, impellers, shredders, expensive pump cleaning . . . in short, the facts on simple, dependable, economical, clean Blackburn-Smith Ejectors. Valves and switches are controlled automatically for unfailing operation by electricity, by floats, and by pneumatic action. Learn how simple, compact, and inexpensive they are to install, operate, and maintain compared to complicated systems. Get today's facts today—Send the coupon in now!

BLACKBURN-SMITH MFG. CO., INC.,
57 GARDEN ST., HOBOKEN, N. J.
HO 3-4425 • N. Y. Tel., BA 7-0600

Automation Parking Pays Big Revenues

WRRS ELECTRIC PARKING GATES

Eliminate Labor Costs—Easy to Operate

Municipalities and parking operators find that Automation Parking with WRRS Gates pays big revenues. It results from low installation costs, practically no maintenance costs, and no labor costs—the biggest cost of parking lot operation. And it's a simple matter to make periodic collections at one or two coin boxes.

This is the answer to off-the-street parking problems. WRRS Gates operate with Remote Controls, using coins, tokens, keys, or any combination of these methods. WRRS Gates are safe, function in all types of weather, and are built to last 20 to 30 years.

Send us a diagram of your lot, and receive, without obligation, a parking plan and cost estimate.

MADE BY THE BUILDER OF 10,000 RAILROAD CROSSING GATES 5977

WRRS
WESTERN RAILROAD SUPPLY COMPANY
General Offices and Factory
2430 S. Ashland Ave. • Chicago 8, Ill.
IN CANADA: Cameron, Grant Inc.
5002 Park Ave., Montreal 8, Quebec, Canada

Helps Police and Firemen Control Crowds

Operating economically on dry batteries, this new portable public address and paging system is a valuable aid to police and firemen in controlling large crowds. The light-weight unit features a small, powerful microphone, and permits contact with individuals or crowds from foreground positions to as far away as a quarter of a mile. It is made by RADIONIC INDUSTRIES, 321 W. HUBBARD ST., CHICAGO 10, ILL.

The Ultra Sonic portable public address system is furnished in a steel case with an adjustable shoulder strap. It operates on four 6-volt dry batteries. A trumpet-type speaker and a microphone with an 8-foot extension cord are furnished with the unit.

No experience is needed to operate the Radionic Ultra Sonic. You simply grab the microphone, press a button, and start talking. There are no adjustments to make, no dials to turn and no experimental tuning in.

For additional details, write the manufacturer directly, or you may use the Post Card on the insert following Page 52. Circle No. 813.

When You Order Mechanical Joint Pipe

SAY McWANE-PACIFIC

"BOLTITE"

Boltite is standardized mechanical joint pipe. Glands, gaskets, bolts and joint dimensions are standardized with all leading pipe makers, and are interchangeable for given sizes of pipe.

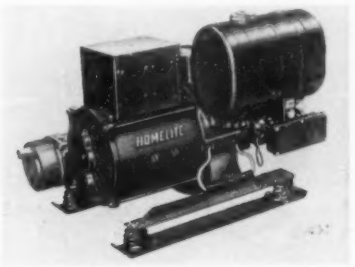
Boltite mechanical joint lays fast. Joints are quickly made by unskilled workmen. The only tool needed is a ratchet wrench. There is no lead pot. Joints may be made in a wet trench. The joints are flexible and and stay flexible, allowing for expansion or contraction and settlement without leakage. The joint materials are as durable as the pipe itself—both last for centuries.

For details, write or wire McWANE CAST IRON PIPE COMPANY, Birmingham, Alabama, or PACIFIC STATES CAST IRON PIPE COMPANY, Provo, Utah. (Sales Offices in Principal Cities.)

McWANE PACIFIC PIPE *Lasts for Centuries*

Power for Portable Tools

In addition to providing adequate standby power in emergencies, this small-size electric generator will operate all types of portable electric tools efficiently



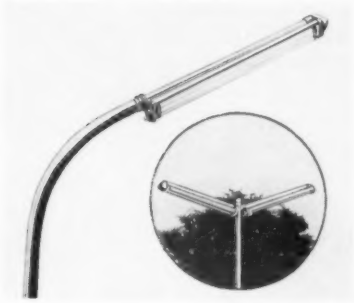
and economically. The new 90-pound Homelite 35A115 generator delivers 1,500 watts of dependable 115-volt, 60-cycle AC power. It is equipped with four conveniently located outlets, enabling the unit to operate several tools simultaneously.

One of the most important features of the new generator, reports Homelite, is "close voltage regulation." A simple Germanium bridge rectifier is used for

excitation. The generator is compound wound to maintain a constant voltage output as the load is applied. This combination of static excitation and static control limits the voltage change to only 4% from no load to full load, insuring longer life for the electric motor.

A detailed description of the Model 35A115 is contained in literature from HOMELITE, 101 RIVERDALE AVE., PORT CHESTER, N. Y. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 826.

Improved Lighting



An efficient, economical way to light white-ways, tunnels, underpasses and parking areas, is to install the new Pfaff & Kendall fluorescent luminaire. Designated the Luxaire (R), the unit is quickly and easily mounted on existing poles, or on companion-designed P&K Davits or Standards.

According to the manufacturer, the new luminaire produces about 40% more light than filament type lamps, using the same energy. Further, it is said to be free from glare, and excellent in retaining color values.

Detailed information on the Luxaire (R) may be obtained from PFAFF & KENDALL, 84 FOUNDRY ST., NEWARK 5, N. J. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 840.

Variable Chlorine Feeding

Two low-cost methods for feeding chlorine at preselected rates, without manual supervision, are offered by BUILDERS-PROVIDENCE, INC., 358 HARRIS AVE., PROVIDENCE, R. I. Both methods, semi-automatic and step control, may be economically incorporated in your chlorine feeder installation. Once installed, these methods assure low operating costs and reduced chlorine costs, and are said to result in a sizeable savings in manhours.

Semi-automatic control of a Chlorinizer provides automatic start and stop of chlorine gas feed in sequence, with pump operation or timer cycling. The desired rate of feed is manually adjusted. During each pump operation or time "on" period, chlorine feeds at the set rate as long as the pump runs or the timer dictates.

Step control is an extension of semi-automatic control and provides automatic start and stop of the Chlorinizer, plus automatic adjustment of the chlorine feed rate in pre-selected steps.

The new control methods are particularly useful in municipal waste treatment, intermittently-operated pump discharge, and elevated tank storage. They are fully described in *Bulletin 840-K16*.

For your copy of the new bulletin, write the company directly, or you may use the Post Card on the insert following Page 52. Circle No. 812.

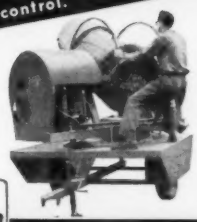
Greatest rate-of-work capacity of any mist sprayer!

the John BEAN ROTOMIST 100-E

delivers **28,000 CFM*** *of air spray at* **400 lbs. pressure**

Only the John Bean Rotomist can give you this combination — the drive of straight-through, big volume air flow from an axial flow fan *plus* a plunger-type pump designed to handle all types of spray materials. You get fast tree-top "reach" and thorough coverage — the capacity that's needed for an effective and economical shade tree protection program. Note these features of the Rotomist 100-E: • Effortless hydraulic 360° rotation and 110° vertical pivoting. • Oil bath pump with Sapphite lifetime cylinders • Fully enclosed transmission • mechanical and jet agitation in new "mixing-bowl" shaped tank.

* Recent recommendations by U. S. Department of Agriculture specialists call for equipment of 25,000 c.f.m. or more for effective Dutch Elm disease control.



AVAILABLE IN SKID OR TRAILER MOUNTINGS

Both the Model 100-E Rotomist and the economical, medium capacity Model 75-E are available with skids for mounting on a truck bed or as mobile, trailer-mounted units.

fmc FOOD MACHINERY AND CHEMICAL CORPORATION

John BEAN LANSING 4, MICHIGAN SAN JOSE, CALIFORNIA

Division of Food Machinery and Chemical Corporation

Please send me: ( ) New 1956 Rotomist catalog. ( ) Spray Concentration and Gallonage Data. ( ) Mist Sprayer Comparison Table. ( ) Mosquito Control Costs

ATTACH COUPON TO CARD OR LETTERHEAD—GIVE NAME AND ADDRESS

Pierce
QUALITY BRAND
UTILITY BODIES

"SM" SERIES—74"-104" long by 74"-88" wide. Completely equipped with tool and parts storage space for efficient operation.

"CMS" SERIES—74"-104" long by 74"x88" wide. Transverse compartment through front of body carries meters, parts and tools. Rolling drawers with removable dividers.

"TT" SERIES—Transformer Trailer—one design of many for installing or restoring service. Simplifies change-outs with fast service, anywhere.

Also complete line of Line Construction, Gas, Ladder, Aerial Tower Bodies, Trailers and Pick-up Side Boxes.

Write for Complete Information

Company .....
Name .....
Address .....
City ..... State .....
I am interested in
Service Bodies ☐ Trailers ☐
Pick-up Boxes ☐ Line Bodies ☐
for ½ ton ☐ ¾ ton ☐ 1 ton ☐ 1½ ton Chassis ☐

AUTO BODY WORKS, Inc.
APPLETON, WISCONSIN

Purchasing

Steel Well Points

In addition to Everdur (silicon-bronze) well points, Edward E. Johnson, Inc., is now offering a stainless steel well point designed for easy connection to 1¼-, 1½- and 2-inch standard pipe. The well points are made with continuous slot openings for maximum inlet area. The

V-shaped slots won't clog, and the screen may be acid-treated in place and is not subject to galvanic corrosion.

The new well points are constructed of Type 304 stainless steel with a high-grade 18-8 stainless alloy. They are made with any length screen, and with slot openings varying from 0.006- to 0.125-inch in width.

Additional information on stainless steel well points may be obtained from EDWARD E. JOHNSON, INC., 315 N. PIERCE ST., ST. PAUL 4, MINN. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 819.

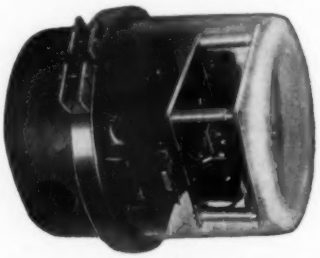
Increased Truck Sales Expected in '56

G. F. DeCoursin

One of the largest peacetime sales years in FWD's 45-year history, with an increase of more than 40% over 1955, is foreseen in 1956 for the Four Wheel Drive Auto Co., Clintonville, Wis. According to G. F. DeCoursin, the company's vice-president in charge of sales, truck sales for the current fiscal year, which ends next July, will be $17½- to $18-million, compared with $12,808,616 for the fiscal year 1954-55.

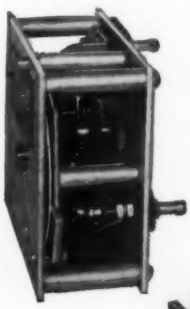
FWD, pioneer manufacturers of all-wheel-drive trucks, has diversified its production in the past year to include equip-

TIME-O-MATIC
FLASHERS
JACK MOUNTED

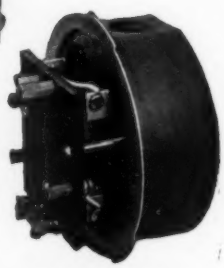


Time-O-Matic Jack Mounted Flasher in Standard Meter Case

Single or two circuits, every model with built-in eliminators. Available with standard meter case (above) or separately with Jack mounting panel (below).



Time-O-Matic Jack Mounted Flasher Only



Time-O-Matic Jack Panel in Meter Case

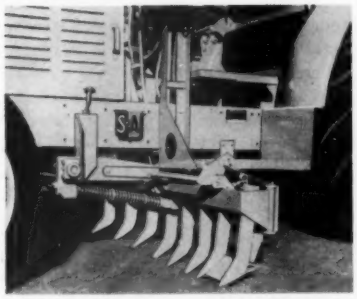
SPECIFY DEPENDABLE TIME-O-MATIC

"A Sign of Good Control"

TIME-O-MATIC CO.
1108 Bahls Street
Danville, Illinois

ment for over-the-road transport, construction, fire-fighting, highway maintenance, cross-country line construction, oilfield operations and logging. The company recently concluded a coast-to-coast truck exhibition, displaying and demonstrating the latest FWD all-wheel-drive fire, utility, highway, and extra-heavy-duty equipment.

Soil Stabilization Accessories



Easily mounted on a Pulvi-Mixer or Trav-L-Plant, the new scarifier attachment is ideal for light scarification in combination with in-place mixing.

A low-cost underbody scarifier attachment, a high-capacity pump, and a 4-foot stabilizing attachment, are offered for use with the Seaman Pulvi-Mixer and Trav-L-Plant, economical units designed for soil-cement and compaction work. All three accessories may be obtained from the SEAMAN-ANDWALL CORP., 292 N. 25TH ST., MILWAUKEE 1, WIS.

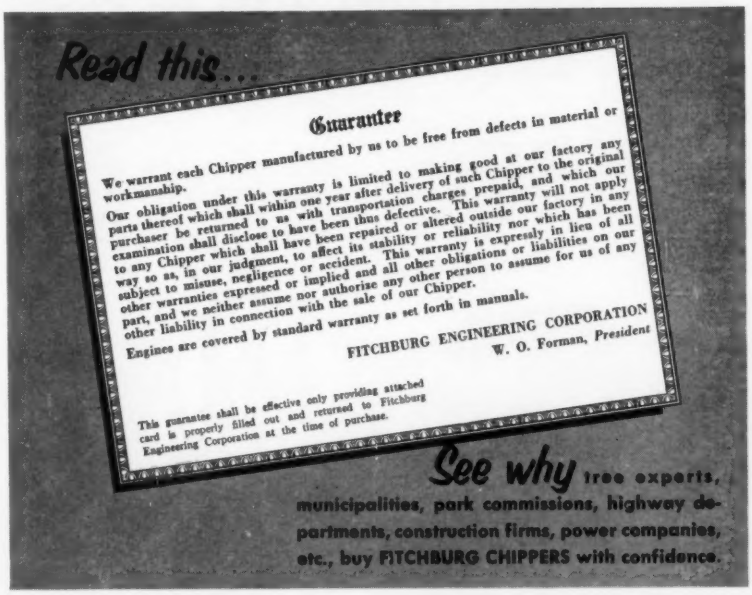
The new underbody scarifier features six heavy-duty teeth and a header board or curb shoe, and is particularly useful for light scarification in combination with in-place mixing. It is easily bolted between the front and rear wheels of the Pulvi-Mixer or Trav-L-Plant, and is hydraulically controlled from the operator's station.

The new pump features a maximum capacity of 650-gpm, and employs a Wisconsin V4 engine, with direct drive to a 4-inch centrifugal pump. It is available as optional equipment with the Seaman Trav-L-Plant.

Another new accessory, the 4-foot stabilizing attachment, may be used for widening roads and building all-weather road shoulders. It features a 4-foot mixing width, and can be installed in minutes on the Pulvi-Mixer or Trav-L-Plant.

Detailed information on all three accessories may be obtained directly from the manufacturer, or you may use the Post Card on the insert following Page 52. Circle No. 828.

ONLY FITCHBURG CHIPPERS give you a ONE YEAR GUARANTEE!


Read this...
Guarantee
We warrant each Chipper manufactured by us to be free from defects in material or workmanship.
Our obligation under this warranty is limited to making good at our factory any parts thereof which shall within one year after delivery of such Chipper to the original purchaser be returned to us with transportation charges prepaid, and which our examination shall disclose to have been thus defective. This warranty will not apply to any Chipper which shall have been repaired or altered outside our factory in any way so as, in our judgment, to affect its stability or reliability nor which has been subject to misuse, negligence or accident. This warranty is expressly in lieu of all other warranties expressed or implied and all other obligations or liabilities on our part, and we neither assume nor authorise any other person to assume for us of any other liability in connection with the sale of our Chipper.
Engines are covered by standard warranty as set forth in manuals.
FITCHBURG ENGINEERING CORPORATION
W. O. Forman, President
This guarantee shall be effective only providing attached card is properly filled out and returned to Fitchburg Engineering Corporation at the time of purchase.
See why tree experts, municipalities, park commissions, highway departments, construction firms, power companies, etc., buy FITCHBURG CHIPPERS with confidence.

THIS ONE YEAR GUARANTEE is your assurance that your FITCHBURG CHIPPER is engineered for trouble-free service and to stay out of the shop. The FITCHBURG CHIPPER unit itself is guaranteed for material and workmanship, as specified above for a period of one year after date of purchase.

TOP ENGINEERING AND PROVED PERFORMANCE make this guarantee possible. There are no heavy flywheels (with their warm-up period, and resulting disadvantages in start-stop operation). Consequently, there is no danger of clutch strain or frequent bearing failure.

Exclusive Safety Spring

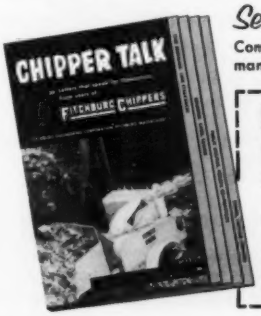
The *Fitchburg Safety Spring* provides a spring-activated feed plate. This exclusive and patented feature is found only on FITCHBURG CHIPPERS, and makes chipping of all sizes of wood (up to the machine's rated capacity) equally simple.

Because of their superior engineering qualities, FITCHBURG CHIPPERS bring to your operation new operational *speed*, coupled with design for *safety* and *ease of operation*. You will find that FITCHBURG CHIPPERS are manufactured for trouble-free performance and will give you years of faithful, efficient service with a minimum of maintenance expense.

Do You Buy On Sealed Bids?

Many chipper owners do. But one word of caution. *Know what you are buying.* Ask for *full* specifications and be sure you purchase the proper machine for your operation. Be sure also you don't get bids on stripped-down machines with extra costs to come later for equipment necessary to get the machine into operation.

Bids on FITCHBURG CHIPPERS are made on complete machines (with extra set of blades) ready to operate, and rated by experts for your own brush disposal problems. Ask for a demonstration and compare. *Pay special attention to quietness of operation.* This is important when operating on residential streets. Your FITCHBURG CHIPPER will help you solve brush disposal problems with speed, efficiency, and relative quietness of operation.



Send For New Free Booklet - **"CHIPPER TALK"**

Complete cutaway color drawings and photo copies of letters from many municipalities, commissions, counties, contractors, tree care men.

FITCHBURG ENGINEERING CORPORATION

Department AC-26 Fitchburg, Massachusetts

Send my free copy of "*Chipper Talk*" to:

Name_____ Position_____

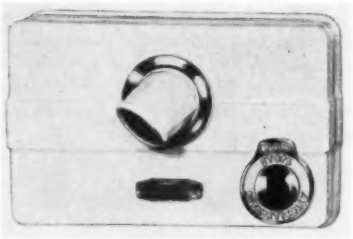
Address_____

Town or City_____ State_____

Electric Hand Dryer for Public Washrooms

Fast, efficient drying is assured with this semi-recessed electric hand dryer, introduced by THE CHICAGO HARDWARE FOUNDRY CO., 5116 COMMONWEALTH AVE., N. CHICAGO, ILL. Ideal for installation in public washrooms, the dryer features an improved heating element and a nozzle which concentrates the air stream from a large blower and motor. Instant starting is provided by an easy-to-operate starting switch, and a simplified timing device shuts the machine off automatically.

A new circuit-breaker on the semi-recessed model prevents damage when someone places their hand on the air intake or nozzle. The dryer is housed in a cast-iron frame and case, with a porcelain-enamel finish. It provides 24-hour automatic drying service, saving towel costs and the expense of washroom maintenance.



In addition to the semi-recessed model, the company manufactures a wall model dryer for flush mounting, and a pedestal model. For full details, write the manufacturer directly, or you may use the Post Card on the insert following Page 52. Circle No. 844.

MH
MOTOR OPERATED
GATE VALVES
Electric motor operation is recommended for large M & H Gate Valves, or where valves are frequently operated, or where valves are located in remote, inaccessible or hazardous places. The remote control, possible with electric motor operated M & H Valves, is a convenience which frequently increases efficiency and reduces operating costs.
The 36" motor operated M & H Valve illustrated here is standard M & H Gate Valve design and construction—iron body, bronze mounted, double disc, parallel seat. All sizes of electric motor operated M & H Gate Valves are available in Class A for 50 lbs. working pressure, Class B for 100 lbs. working pressure or A.W.W.A. Class C for 150 lbs. working pressure. Furnished with hub, flanged or mechanical joint ends.
M & H VALVE AND FITTINGS COMPANY
ANNISTON, ALABAMA
M&H PRODUCTS
FOR WATER WORKS • FILTER PLANTS
INDUSTRY • SEWAGE DISPOSAL AND
FIRE PROTECTION

Demand Rises for Clay and Concrete Pipe

The record breaking construction of new municipal and industrial sewerage lines and treatment plants has created an unequaled demand for clay and concrete pipe, reports E. L. Miller, president of The American Vitrified Products Co., Cleveland, Ohio. Company sales for the fiscal year 1955 were $9,813,000, as compared to $7,749,000 for 1954.

According to Mr. Miller, there is a greater backlog of municipal and industrial construction planned for 1956 than ever before. Hundreds of sewerage disposal treatment plants, plus millions of feet of sanitary lines will be laid in 1956 to maintain the high standards of public sanitation.

New Fire Extinguisher

Use this stainless steel fire extinguisher in schools, hospitals, and wherever a lightweight, easily portable unit is required. The new Pressurized Water extinguisher is easily installed in fire hose and extinguisher cabinets. It is said to weigh about four pounds less than any 2½-gallon brass extinguisher.

A light pressure of the thumb on the extinguisher releases a strong 35- to 45-foot stream of water. A visual pressure gauge tells at a glance if the extinguisher is in proper operating condition. The

entire unit is hydrostatically pressure tested to 500 psi, and bears the Underwriters' Laboratories A-1 rating.

Detailed information on the new stainless steel fire extinguisher may be obtained from the FYR-FYTER CO., 221 CRANE ST., DAYTON, OHIO. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 827.

An air-inlet valve re-pressurizes the new stainless steel fire extinguisher.

Speeds Tree Trimming Operations

New pruner weighs less than five pounds.

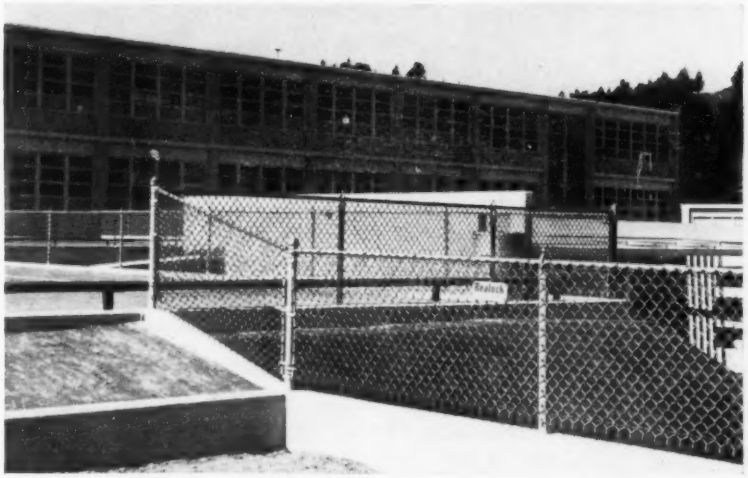
WEED CONTROL SERVICE, INC., PORTLAND, ORE., offers a new type of portable air pruner designed to reduce tree trimming time by one-third. The Ackley air pruner weighs less than five pounds, and can be used for all trimming operations. It features a 7-inch blade, revolving at 0-5000 rpm, with a cutting capacity up to four inches.

The motor of the new pruner is located next to the saw blade. Both blade and brake are operated with fingertip controls. A minimum of working parts assures less wear and less maintenance.

The over-all length of the unit is 76 inches, with a fully insulated handle and extensions designed for quick coupling. This permits a greater reach from power ladder equipment or from the ground. The pruner operates best at 140 psi, and uses 17- to 20-cubic-feet of air.

Detailed information on the Ackley air pruner may be obtained directly from Weed Control Service, Inc., or you may use the Post Card located for your convenience on the insert following Page 52. Circle No. 843.

REALOCK FENCE



. . . the permanent protection for schools and municipal property

Realock Fence offers positive and permanent protection for school and municipal property by providing an effective, ever-present barrier against vandals and other unwanted visitors. What's more, Realock's neat, well-tailored look improves the appearance of the area it protects.

Heavily galvanized for long-lasting weather resistance, Realock Fence is available in a wide variety of types—with or without barbed wire tops. Full details and free estimates available . . . see your classified telephone directory for sales office or write to the nearest office listed below.

THE COLORADO FUEL AND IRON CORPORATION, Denver and Oakland
WICKWIRE SPENCER STEEL DIVISION, Buffalo, New York 3333

REALOCK FENCE
THE COLORADO FUEL AND IRON CORPORATION

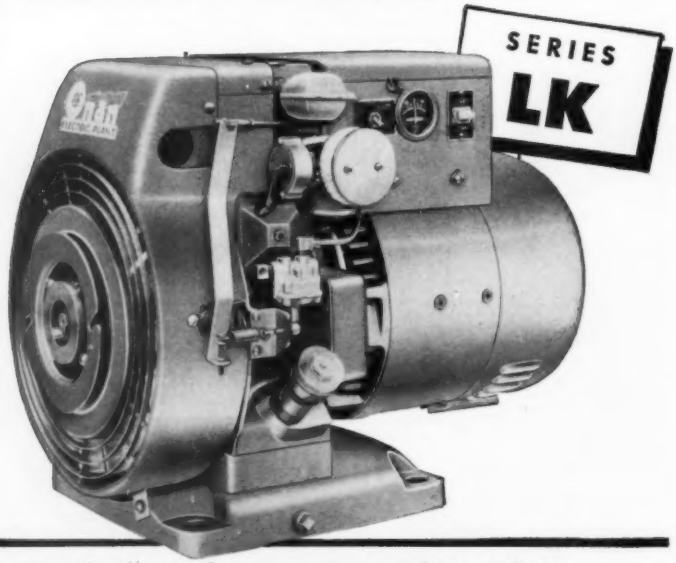
CF&I

BRANCHES IN ALL KEY CITIES

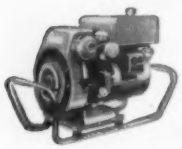
RUGGED

is the word for this

New ONAN 2-KW Electric Plant



Put it to work on your toughest jobs!



PORTABLE POWER

Stands up better under rough handling. Carrying -frame or 2-wheel dolly optional.

PRIMARY POWER

Runs longer in continuous day-after-day service. Dependable, economical.

A dependable source of electricity for emergency standby use

Built to do the job where other units won't stand up! This new 2,000-watt, A.C., 115 or 230-volt, gasoline-driven Onan plant can take all kinds of punishment and come back for more. It's powered by a husky, Onan 4-cycle, single-cylinder, engine with Stellite-faced rotating exhaust valve, larger longer-wearing bearings, and efficient, trouble-free air-cooling. The Onan-built generator is direct-connected, permanently aligned, and fully-protected for use under all climatic conditions.

The Onan "LK" is compact too . . . requiring less than 3 square feet of floor space. Heavy-duty construction throughout . . . yet it weighs only 235 pounds. In carrying frame or dolly-mounted it can be taken anywhere and is easily moved around on the job.

The rating of 2,000 watts is conservative, allowing ample overload. Fuel consumption at full rated load is less than one quart of gasoline per kilowatt hour, making the "LK" a low-cost source of primary power. Recoil rope starter on models for portable use; electric starting available for stationary installations; automatic controls for emergency standby use.

Wide range of accessories available

Write today for special "LK" folder!

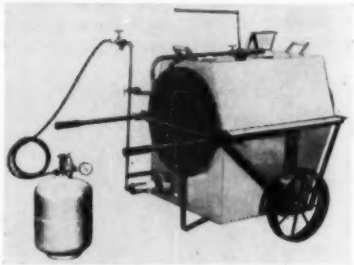
D. W. ONAN & SONS INC.

Onan ELECTRIC PLANTS

2548 UNIVERSITY AVE. S.E. • MINNEAPOLIS 14, MINNESOTA

Purchasing

Fast Way to Heat Bituminous Liquids



Street construction and maintenance is easy—even in cold weather—when you use this economical barrel heater. The unit operates on the job, heating bituminous liquids. It weighs 200 pounds, is constructed of sheet metal and iron parts, and may be fired by either bottled gas or kerosene. Wide tread steel wheels assure easy handling.

The chances of over-heating and the hazard of flash fires are eliminated with the new Tarco Heater. The side and end bung agitators assure proper venting before heat can be applied, and a convenient temperature indicator tells the operator when the liquids are hot enough for use.

Additional information on the Tarco Barrel Heater may be obtained from the TARRANT MFG. CO., 27 JUMEL PL., SARATOGA SPRINGS, N. Y. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 811.

New Motor Graders

Two new models, the T-500 (125-hp) and the T-600 (140-hp), have been added to the Galion line of motor graders. Both units are equipped with Grade-O-Matic drive, utilizing a torque converter and power-shift transmission. They are

engineered for greater "push-power" at the blade, making it possible to move more material in quicker cycles.

The special Grade-O-Matic drive permits up to 300% torque multiplication on the output drive shaft. Power is automatically applied to the job in an infinite number of ratios. A tail shaft governor on the torque converter adjusts

the engine speed automatically to meet all loads or conditions, at any predetermined working or travel speeds.

A 4-speed power-shift transmission, four forward and four reverse speeds, does all the hard work. The operator simply moves the fingertip control levers. Either forward or reverse shift can be made while moving in either direction.

Detailed information on the new motor graders may be obtained from the GALION IRON WORKS & MFG. CO., DEPT. A-26, GALION, OHIO. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 829.

American-Marietta Subsidiary Buys Tellyer Facilities

The recent purchase of the plants and inventories of the Tellyer Concrete Pipe Co., is announced by Elmer L. Johnson, president of Concrete Conduit Co., of Colton, Calif., a subsidiary of the American-Marietta Co. The Tellyer facilities are located in El Paso, Tex., Albuquerque and Farmington, N. M., and Healdsburg, Calif.

The Tellyer plants, reports Mr. Johnson, will enable Concrete Conduit to supply concrete pipe for water, drainage and sewer installations in areas not previously served by the company. The San Francisco Bay Area will be served from Tellyer's Healdsburg plant.

Cuts Time to Produce Stores Catalog

The Los Angeles County central purchasing office has produced its Stores Catalog smoothly and more rapidly with a new duplicator, the Azograph. This process eliminates a smudge problem caused by the impact of addressing plates on the offset masters formerly used.

According to Griswold & Co., Los Angeles distributors of A. B. Dick duplication equipment and supplies, smudges left by the addressing plates can be removed from Azograph masters in 1/20th the time formerly required. This meant a big time savings for the county, since 30 pages of the 1,500-page, loose-leaf Stores Catalog had to be produced anew each day because of additions, deletions and changes.

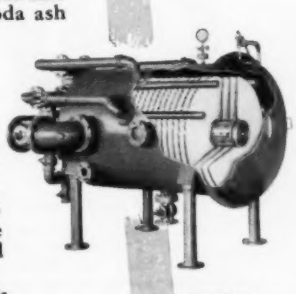
For more facts about this short-run duplicating process, write the A. B. DICK CO., 5700 W. TOUHY AVE., CHICAGO, ILL., or you may use the Post Card on the insert following Page 52. Circle No. 824.

Sparkling clear Bacteria Free Swimming Pool Water

With minimum chlorination and no alum, soda ash treatment!

The Sparkler Model SCJ diatomite water filter reduces bacteria 80% to 100% and removes all visible sediment and organic matter, producing a clear sparkling swimming pool water of zero turbidity. Thus a minimum of chlorination is required for safe sterile water without irritating alum and soda ash treatment. Bathers will enjoy swimming in safe, clear, natural water without the objectionable taste and burning eyes and skin caused by harsh chemical treatments.

The Model SCJ is a slurry feed diatomite filter with a built-in jet spray for flushing. The synthetic orlon cloth filter media precoats quickly and washes clean rapidly. Less than 0.2% of water is required to backwash and clean this filter. A complete fresh pre-coat of diatomite can be applied and the filter put back in operation in 15 minutes. Anyone can learn the simple procedure to clean and pre-coat a Sparkler filter in a few minutes.



Model SCJ for large pools available in capacities up to 5 million gals. per day

The original cost of the Sparkler SCJ filter is about ⅔ that of a sand filter of equal capacity and requires less than ½ the floor space. Complete recirculating systems, including a debris catcher and chlorinator can be engineered into the installation when required.

PORTABLE FILTER Model C is a low cost diatomite filter especially designed for private pools, very simple to operate. Made in two sizes, 7 sq. ft. and 14 sq. ft. Bulletin on request.

Write—without obligation—for plans and prices on your requirements. Our filtration engineers will gladly give personal service to your filtering problems.

Filtration engineering and manufacturing exclusively for over 30 years.

SPARKLER

MANUFACTURING CO., Mundelein, Illinois

Sparkler International Ltd. with plants in Canada, Holland, Italy and Australia—Service representatives in principal cities throughout the world.

New Snow Thrower Clears 18-inch Path

This new sidewalk snow plow works in heavy drifts, light snow or slush, clearing an 18-inch path quickly and easily. The Triple-M snow thrower discards the snow to either side of the machine, and will propel it as far as 30 feet. The clearing blades are easily adjusted to any height, protecting paved surfaces.

Power for the new Triple-M is furnished by a K-90 engine from Kohler Co., of Kohler, Wis. The gasoline-powered engine develops 2.5-hp at full speed. A larger engine is available for the heavy-duty model Triple-M.

Detailed information on this efficient new snow thrower may be obtained from MOTCH & MERRYWEATHER MACHINERY CO., GATES MILLS, OHIO. Write

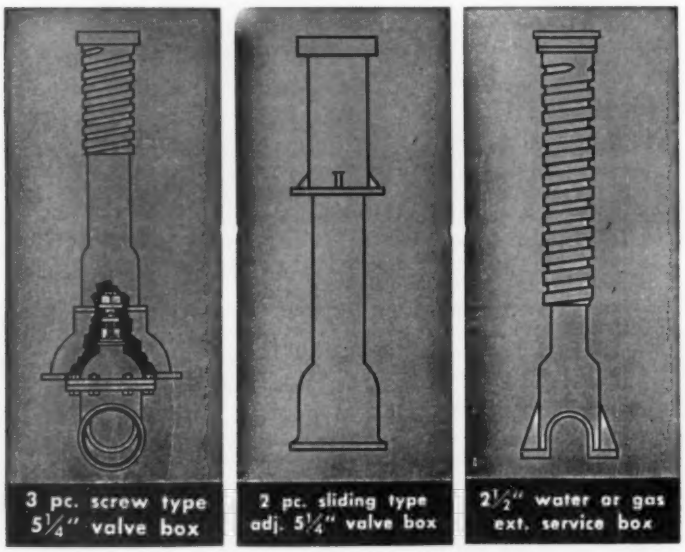
directly, or you may use the Post Card conveniently located on the insert following Page 52. Circle No. 815.

BUFFALO PIPE & FOUNDRY

BUFFALO MUNICIPAL CASTINGS

are available in every size and style!

No matter what size, shape or style municipal casting you may desire — you're practically sure to find a "Buffalo" casting to serve your needs. Or, where desired, castings may be made to your own specifications. Whether you need valve, service or roadway boxes, meter boxes, manhole rings and covers or other municipal castings, you'll find all "Buffalo" castings designed for service and dependability.



3 pc. screw type 5¼" valve box

2 pc. sliding type adj. 5¼" valve box

2½" water or gas ext. service box

Prompt quotations given on all your standard or special gray iron or non-ferrous castings.

Write or wire for Bulletin M11.

SINCE 1930
BUFFALO PIPE & FOUNDRY CORP.

BOX 55 — STATION B DE 6764 BUFFALO 7, N. Y.

Truck Demand Rises

Sales of large-capacity motor trucks, long a barometer of business conditions, will rise to their highest peak in 1956, according to P. O. Peterson, president of MACK TRUCKS, INC., 350 FIFTH AVE., NEW YORK, N. Y. The company, he reports, is tooling up for the greatest truck demand in its 56-year history.

Mr. Peterson is also anticipating extremely heavy demands in 1956 for buses and fire apparatus. The exodus from the cities to the suburbs is creating new communities almost overnight. All of these communities, he reports, will need fire equipment, and most will need buses. Mack has geared its facilities and expanded its organization to meet this increased demand.

New Air Compressor

This newest Jaeger Roto Air Plus compressor unit delivers 365 cfm of air instead of the conventional 315 cfm, increasing its usefulness for gunite work and heavy-duty sand blasting, and enabling it to operate a heavy-duty wagon

drill and hand-held rock drill simultaneously. The new rotary compressor features a full load speed of 1,700 rpm. This slow speed of operation results in increased engine and compressor life, and greater fuel savings.

Instant-acting controls, with continuous, stepless regulation of engine speed to air demands, maintains 100 psi minimum air pressure under all normal working conditions. Other features include an 8-hour fuel tank, adjustable radiator shutter, wrap-around bumpers, and an automotive-type steering front axle.

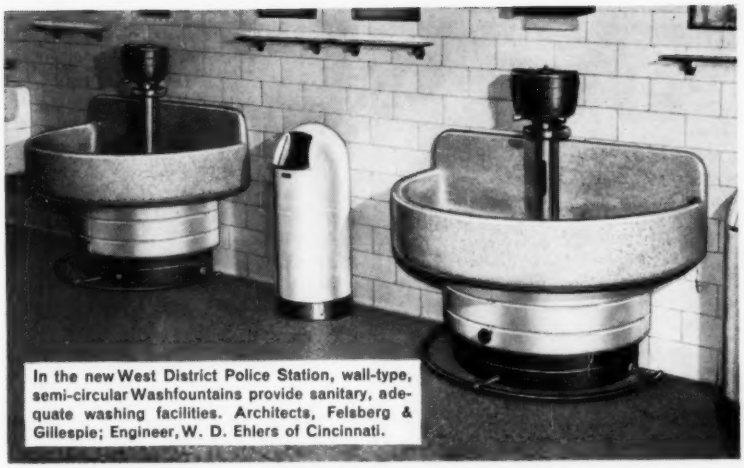
Detailed information on the Roto Air plus compressor may be obtained from the JAEGER MACHINE CO., 505 DUBLIN AVE., COLUMBUS 16, OHIO. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 832.

Light-Weight Machine for Trowelling Concrete

Every municipal maintenance department will benefit from the Roto-Trowel, a light-weight machine especially useful in concrete floor work. The 3-bladed machine weighs only 69 pounds, and is easily operated by one man. A special control stops the machine from rotating, without stopping the engine, the instant the operator lets go of the handle.

A Briggs and Stratton engine, rated at 2.2 hp, powers the new G24 Roto-Trowel. The unit features a pitch-control knob, located on the handle, which enables the operator to adjust the pitch of the blades to any degree while the machine is in motion. By adjusting this special knob, the combination trowel blades can be used for both floating and finishing.

A detailed description of the G24 Roto-Trowel may be obtained from the STOW MFG. CO., 192 SHEAR ST., BINGHAMTON, N. Y. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 833.



In the new West District Police Station, wall-type, semi-circular Washfountains provide sanitary, adequate washing facilities. Architects, Felsberg & Gillespie; Engineer, W. D. Ehlers of Cincinnati.

In Cincinnati, Washrooms Are Strictly Sanitary and Economical

Modern washrooms with clean floors and walls, and Bradley Washfountains belong together. Bradleys provide more facilities in less space, reduce water consumption, cut piping installation costs.

The clean spray of running water serves 5 to 6 at the 54-in. wall type Bradley and up to 8 or 10 at the large full circle model. The bowls are self-flushing to prevent collection of contaminating used water.—Bradleys help keep washrooms spick-and-span and reduce janitor work . . . For complete specifications on all models write for copy of new Catalog 5601.

BRADLEY WASHFOUNTAIN CO.
2333 W. Michigan St.
Milwaukee 1, Wis.

New Catalog 5601 yours for the asking.

Distributed Through Plumbing Wholesalers

Bradley full circle Washfountains, City of Cincinnati, West Park Incinerator Plant. Architects, Pepinsky, Grau & Schrand; Engineer, W. D. Ehlers of Cincinnati.

BRADLEY washfountains

Versatile

"GUNITE"

FOR REPAIRS TO SEWAGE DISPOSAL PLANT

Before

After

The existing concrete on this sewage disposal plant in western New York had deteriorated to an alarming extent and necessitated the rebuilding of practically the entire plant above ground. The pictures above are evidence that "Gunite" repair is not only practical but that it resulted in complete restoration of the plant.

On job after job, "Gunite" proves its worth. Our engineers will inspect your facilities and make recommendations for repairs without obligation on your part.

Engineers: For detailed information on "Gunite" the versatile repair material for all types of concrete structures, send for our 48 page bulletin. Pease use the coupon. Mail to

PRESSURE CONCRETE CO.

Dept. AC

"GUNITE" Contractors and Engineers

315 S. Court St., Florence, Alabama
33 N. LaSalle St., Chicago, Ill.
193 Emmet St., Newark, New Jersey

Pressure Concrete Co.
315 S. Court St.
Florence, Ala.
Please send me the 48 page bulletin.
Name .....
Company .....
Address .....
City ..... Zone .... State .....
MAIL TODAY AC

Purchasing

Ward LaFrance Becomes Glen Alden Subsidiary

Francis O. Case, president of the Glen Alden Corp., announces the firm's recent acquisition of the Ward LaFrance Truck Corp., of Elmira, N. Y. Ward LaFrance, he reports, will operate as a Glen Alden subsidiary. Joseph G. Grossman will continue as president of the firm, and F. Norman Tracy as vice-president and general manager.

The Ward LaFrance line includes fire apparatus and emergency rescue cars. In addition, the company makes special commercial vehicles which are designed for use by large municipalities and industrial firms.

Chicago Bridge & Iron Expands Two Offices

Enlarged sales offices in San Francisco, Calif., and Tulsa, Okla., are announced by the Chicago Bridge & Iron Co., 332 S. Michigan Ave., Chicago 4, Ill. The new address of the San Francisco office is at 100 Bush St., and the Tulsa office is now located in the Dowell Bldg., 1645 E. 21st St.

SterElators by Everson

Chlorine Gas Control Equipment
Visible Flow Indication
Vacuum Solution Feed
for
Water Works
•
Sewage Treatment
•
Industrial Plants
•
Swimming Pools
•
Easy to Install
•
Easy to Operate
•
Low Maintenance Cost
•

Everson STERELATORS can be furnished for fully automatic, semi-automatic and manual control

Write for STERELATOR Bulletins

EVERSON MFG. CORP.
203 W. Huron St., Chicago 10, Ill.

FROM THE WORLD'S FINEST DETECTION EQUIPMENT MANUFACTURERS

Let 1 instrument do all your work...

THE *Dualtronic* MODEL LC-5

Here is the Instrument for which Municipalities have been looking... ONE Instrument that locates Pipes, Leaks and Valves, yet costs no more. Model LC-5 not only saves you money but does the job accurately and dependably. Ruggedly constructed. Compact. Lightweight. Simple, one man operation. Model LC-5 is fully guaranteed.

plus these BIG features:

1. **Use as Pipe Locator, Leak Detector, Valve Locator.**
2. **Pin-Point Detection.**
3. **Automatic on-off and power switching.**
4. **Crystal microphone.**

The GOLDAK *Company*
Leading Electronic Manufacturers
1933

1544 W. Glenoaks Blvd.
Glendale 1, Calif.

WRITE FOR COMPLETE BROCHURE

Fast Way to Salvage Bituminous Pavement

A low center of gravity increases the stability of the new Grid Roller.

The Hyster "Grid" Roller method of bituminous salvage enables your city to salvage all of the aggregate and re-usable binder in an old street or road. It quickly reduces the material to original aggregate size, ready for re-use in the new surface. This is accomplished quickly and economically, without removing the material from the road bed.

In addition to salvaging deteriorated bituminous road surfaces, the roller may be efficiently used for compacting earth fills for streets, dams, and airport runways. The unit operates at high speeds and leaves less surface fluff. Fewer passes are required for specified density.

Two new booklets, No. 1374 and No. 1375, contain job data, on-the-job photographs, and complete specifications. Both are three-hole punched for ready reference in binders.

For your copies of the new booklets, write the HYSTER CO., 2902-61 N.E. CLACKAMAS ST., PORTLAND 8, ORE., or you may use the Post Card on the insert following Page 52. Circle No. 836.

Manufacturers' Agents Wanted

A few "protected" areas open for qualified Sales Agents to sell newly developed sludge digesting "spore bearing" bacterial cultures for the aid and treatment of Municipal Sewage Treatment Plants.

Must have a knowledge of the functions of a Sludge Digester and the time to call on and service every Sewage Plant within appointed area.

Company will back Agents with complete advertising, promotional and regular direct mail service.

Extra large commissions — estimated earnings, $7500 to $10,000 yearly, Full particulars furnished upon receipt of detailed letter outlining qualifications.

The FX-Lab Company
4 Hill Street Newark 2, N. J.

Oliver United Vacuum Filter for sale

One 8′ x 10′ Oliver United VACUUM FILTER—including Nash Hytor Vacuum Pump, Lime Slaker and storage tanks, filtrate pump, vacuum receiver, exhaust muffler, blower, two Link Belt conveyors and 4" Marlow sludge pump.

Also two U. S. Hoffman centrifugal blowers rated at 420 C.F.M. each at six pounds pressure.

For additional information and bid forms, write,

Purchasing Agent,
City Hall,
Santa Barbara, California

Reduce your water system operating costs with MAGNAMATIC

MAGNAMATIC is a 100% metal-enclosed, oil- filled, completely sealed register, with a portable reading unit that reads the register through the case magnetically

MAGNAMATIC posseses **every feature** found in conventional registers **plus** these additional, exclusive advantages:

(1) Operates on any make meter
(2) Lasts life of meter
(3) Cuts maintenance costs
(4) Cuts re-reads and human error
(5) Makes accurate readings instantly
(6) Speeds and simplifies billing
(7) No clearing of glasses
(8) No bailing out meter boxes
(9) So simple an untrained man can read it
(10) Five-year warranty

YOUR MAGNAMATIC DISTRIBUTORS ARE:

VIKING SUPPLY CORPORATION:
Dallas, Texas
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Oklahoma City, Oklahoma
Tulsa, Oklahoma
Tucson, Arizona
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DAVIS METER REPAIR & SUPPLY CO.:
Thomasville, Georgia
Dania, Florida

SUPPLIES, INC.:
New Orleans, Louisiana

OR WRITE

MAGNAMATIC
CORPORATION OF AMERICA
803 W. Main Ave. San Antonio, Tex.
Distributorships Now Available

PARCOA provides...

A NEW CONCEPT FOR OFF-STREET PARKING

AUTOMATIC PARKING features...

- ★ **FLEXIBILITY OF CONTROLS**—Choice of exclusive coded "card-keys", coins, tokens or any combination.
- ★ **NO ATTENDANTS NEEDED**—Pays for itself.
- ★ **SIMPLICITY OF OPERATION**
- ★ **MINIMUM MAINTENANCE**
- ★ **LOW INITIAL INVESTMENT**
- ★ **SAFETY . . . DEPENDABILITY**

Write for descriptive literature.

PARCOA

Division of Johnson Fare Box Company

4619 N. Ravenswood Ave., Chicago 40, Ill.
Phone LOngbeach 1-0217
Sales and Service Offices in Major Cities listed under BOWSER, Inc.

Purchasing

100th Anniversary

As part of its Centennial Anniversary celebration next spring, the Warren Foundry and Pipe Corp., 55 Liberty St., New York 5, N. Y., will open a new cast iron pipe shop, according to S. E. Shahmoon, chairman of the board of directors. The shop will be an integral part of the company's Phillipsburg (N. J.) Division. It will utilize the deLavaud process of centrifugal spinning in metal molds for pipe sizes 4 through 12 inches in diameter.

Other Warren operations include a sand-spun cast iron pipe foundry in Everett, Mass., and iron ore mines and a crushed stone plant in Mount Hope, N. J.

New Branch Office

The opening of a new office and warehouse at 980 S. Sixth West St., Salt Lake City, Utah, is announced by Earle W. Williams, vice-president of marketing and sales for the Line Material Co., Milwaukee 1, Wis.

Office and warehouse activities will be handled by J. E. Lieubray, branch supervisor, and E. T. Hall will serve as field engineer.

The Bernard *Pressure* Pilot Control for water supply systems

Designed to operate pump motor controllers on single or multiple pump systems, according to the pressure demands, and to assure correct start and stop operation of pump motors without interference of water system surges. The Pilot Control also operates selective sequence control of pump motors according to the anticipated demand.

Write for further information

ERNEST BERNARD ELECTRIC CO.
10335 S. Morgan St.
Chicago 43, Illinois

ARE YOU AN OSTRICH

. . . when it comes to cancer?

Do you bury your head in the sand and hope it won't attack you or someone close to you? Fight cancer with a check-up to protect yourself and a check to help others.

Give to your Unit of the American Cancer Society, or mail your gift to CANCER, c/o your town's Postmaster.

AMERICAN CANCER SOCIETY

ENJOY THE FLORIDA SUN AT THE Daytona Plaza

A CRAIG HOTEL

JOHN E. LEONARD Gen. Mgr.

DIRECTLY ON THE "WORLD'S MOST FAMOUS BEACH"

THE PERFECT spot to rest, and relax . . . right on the "World's Most Famous Beach." Swimming pool, 3 golf courses, putting green. shuffleboard, fishing, dancing, planned entertainment. Excellent food, intimate cocktail lounge. Choice hotel rooms and apartments.

Write for colorful brochure.

DAYTONA PLAZA HOTEL
Daytona Beach, Florida

Fast, Economical Transportation

New Aer-Lift trailer does away with dangerous skid boards and heavy lifting.

Virtually every city department can cut costs and speed the transportation of heavy equipment and supplies with the new Aer-Lift trailer. The trailer is powered by a dependable hydraulic system which makes quick work of raising and lowering the unit. The trailer body is lowered to the ground for easy loading and unloading, and raised to a position above ground level for transporting materials.

Park departments can use the new trailer for transporting, mowing, aerifying and watering equipment, and for carrying sod and shrubbery. On municipal golf courses, it can be used to move top-dressing material, sod cutters, hoses and sprinklers. The trailer may also be used at airports, at cemeteries, and by municipal street departments.

The Aer-Lift trailer is 11 feet-4 inches long, 72 inches wide, and 1-foot deep. It weighs 750 pounds. Maximum guaranteed weight capacity is reported to be ½-ton.

A full description of the Aer-Lift may be obtained from the WEST POINT PRODUCTS CORP., WEST POINT, PA. Write directly to the manufacturers, or you may use the Post Card located for your convenience on the insert following Page 52. Circle No. 831.

STEEL

Every Kind

Quick Delivery

Plates, Structurals, Bars, Sheets, Tubes, etc. Carbon, Alloy, Stainless Steels, Babbitt Metal.

RYERSON

Joseph T. Ryerson & Son, Inc. Plants at: New York, Boston, Wallingford, Conn., Philadelphia, Charlotte, N. C., Cincinnati, Cleveland, Detroit, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles, San Francisco, Spokane, Seattle.

Director of Public Works Wanted

City of Mountain View, Calif. (18,756), invites applications from Civil Engineers registered in California or eligible for registration with responsible administrative experience.

Salary open, depending on qualifications and training.

Apply to **City Manager, City Hall, Mountain View, Calif.** Appointment to be made as soon as possible.

A Practical Sewage Plant for the Small Community -The SPIRAGESTER

Simple Construction
Flexible Operation
Efficient Performance

The Lakeside Spiragester gives the small community a sewage treatment plant combining the best in engineering with bargain prices. It provides a self-contained plant that your community can afford.

- **It is simple**—It places Lakeside's Spiraflo Clarifier over a digestion tank. It combines the simplicity of an Imhoff tank with flexibility and control that no Imhoff tank has. Note the drawing below.
- **It is engineeringly sound**—Operating on proved principles of clarification and separate sludge digestion. You aren't risking your community reputation with an untried experiment.
- **It is easy to operate**—There are no intricate expensive mechanisms to get out of order.
- **And it is farsighted**—When your community grows, as it surely will, and you have to build a larger plant, you can put a floating cover on the Spiragester and turn it into a digestion tank, and then use our Spiraflo Clarifiers for separate primary settling.

Get the full story of the Spiragester by writing for additional information. If you have a larger plant that needs improvement, our engineering department will be glad to help you without obligation. Just drop us a note:

WRITE FOR FREE BULLETIN NO. 135 ON THE SPIRAGESTER

LAKESIDE ENGINEERING CORPORATION
222 W. Adams St. Chicago 6, Ill.

Don Seaman Joins New Seaman-Gunnison Corp.

The addition of Donald J. Seaman, Jr. to the engineering staff of the newly organized Seaman-Gunnison Corp., Baraboo, Wis., is announced by Ivor E. Gunnison, president and general manager of the new firm, and founder of the former Gunnison Mfg. Co. Mr. Seaman, former chief engineer of Seaman Motors, Inc., Milwaukee, Wis., will carry the responsibilities of engineering and new equipment development.

A well-known figure in the construction equipment industry, Mr. Seaman's past experience includes field work in this country and Latin America in the development and operation of soil stabilization and highway maintenance equipment. He has also had broad executive and administrative experience in all phases of the manufacture and application of road building machinery.

Donald J. Seaman, Jr.

The Seaman-Gunnison Corp., as successors to the Gunnison Mfg. Co., will continue to build asphalt distributors, street flushers and high-pressure pumping units for municipal use. The firm also announces plans for the development and manufacture of new road builders' equipment.

HOW

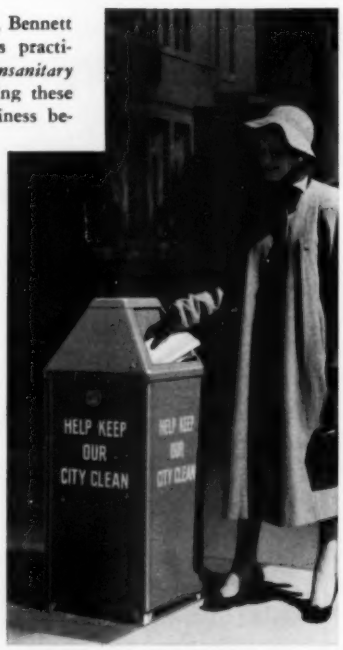
BENNETT

WASTE RECEPTACLES

make Cleanliness automatic

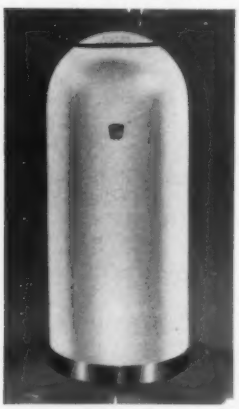
In public buildings, outside on street corners, Bennett Self-Closing and Drop-in Waste Receptacles practically *eliminate the problem of unsightly and unsanitary papers and other trash.* By conveniently placing these waste receptacles to invite their use, cleanliness becomes automatic.

Messages stenciled on Bennett Self-Closing Waste Receptacles increase their use.



BENNETT SELF-CLOSING WASTE RECEPTACLES

BENNETT DROP-IN WASTE RECEPTACLES



- Stainless steel feet eliminate rusting
- All welded construction
- Smooth exterior surface
- Phosphate primed steel for corrosion resistance
- Baked on enamel finish

FILL IN AND MAIL COUPON TODAY

THE BENNETT MANUFACTURING COMPANY, ALDEN, NEW YORK AC-2-56

Kindly send to my personal attention catalogs on Bennett Waste Receptacles.

Name

Title

Municipality

Street

City State

Curb-Footing Excavator

This homemade excavating blade, attached to an International Drott TD-9 skid-shovel, is being used by a Harrisburg (Pa.) contractor to dig curb footings. Material and labor for the entire project is costing only $100.

The blade is made from ¾-inch steel plate, 28 inches wide, with a 15° angle forward from the bottom of bucket level. It will dig to a uniform cut 22 inches

below grade. The plate is supported by 5/16-inch angle irons, each 47 inches long.

All International Drott combinations are available from the INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 1, ILL. For full information, write the company directly, or you may use the Post Card on the insert following Page 52. Circle No. 820.

Drills Holes Quickly

This simple barrow, developed in the shops of the Broadway Maintenance Corp., permits one man to drill all the holes for the anchor bolts which hold lighting standards. Used on New York's Franklin D. Roosevelt Drive, it carries a Pinazza rock drill for drilling holes on the job. The unit is small enough to park on the sidewalk or boulevard strip.

Complete information on the Type P60 rock drill and other light, fast tools, may be obtained from PITNAM INDUSTRIAL PRODUCTS CO., INC., 608 FIFTH AVE., NEW YORK 20, N. Y. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 835.

Locates Water Main Leaks Quickly and Accurately

You can prevent costly water main leaks, without expensive surveys, with a Globe Geophone leak locator.

This dependable instrument quickly and accurately locates underground leaks in water, sewerage and steam pipe. When placed in contact with the earth, either on the surface or underground, the unit detects vibrations from a distance. These vibrations are transformed to sound waves and carried to the ears of the operator through rubber tubes.

The new Geophone operates on the same principle as a seismograph, the instrument used for detecting and recording earthquakes. It has nothing electrical about it. The time required to locate a water leak, when within 50 or 75 feet of it, is seldom over 15 or 20 minutes, and usually less. Further, it is often possible to determine the size of the leak over a wide range.

Full details on this simple, accurate and inexpensive leak locator, may be obtained from the GLOBE PHONE MFG. CO., DEPT. Y, READING, MASS. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 834.

★

Michaels

One of the Nation's Largest Fabricators of Architectural Metal Building Products...

The partial list gives you an idea of the wide range of Michaels products. Whatever you need, if it's made of stainless steel, aluminum or bronze, Michaels can make it. Architects and builders know that when they place a job with Michaels, every component will meet specifications; the materials will be at the location when needed, and the quality and workmanship will be the finest obtainable anywhere. Send us a set of specs for your next project—large or small. You'll find Michaels a thoroughly reliable source of supply.

Bank Screens and Partitions
Welded Doors
Store Fronts (special)
Building Skins
Spandrels
Louvers
Windows (special)
Revolving Doors
Stair Railings
Church Work (special)
Candelabras
Name Plates
Letters
Check Desks
Lamp Standards
Marquees
Tablets and Signs
MI-CO Parking Meters
Museum Trophy Cases
Bronze Inurnment Urns
Bronze Vases
Misc. Metal Work

THE MICHAELS ART BRONZE COMPANY, INC.
P. O. BOX 668-A, COVINGTON, KENTUCKY
Experts in metal fabrications since 1870

Here's why BANTAM

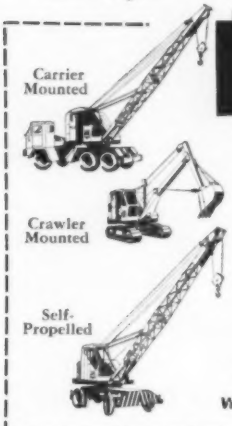
does more different jobs... saves money

One BANTAM at one low cost can do the work of a fleet of specialized equipment. Just about *any* job involving trenching and excavating, handling and loading, stock piling or landfill work, erecting steel or driving piles—you can do them all easier with the BANTAM.

BANTAM has proved the ideal size for easy traveling and working busy city streets; no delays for loading and unloading from trailers. On the job, big-output BANTAMS have the fast cycle and easy control that save time and move you quickly on to other work.

With BANTAM's famous nine easy-change attachments, you're equipped for efficient, money-saving tackling of any job that comes up. Carrier, crawler and self-propelled models with crane capacities of 10,000 lb. to 14,000 lb.—90 yd. to 100 yd. per hour digging output.

BANTAMS cost less to buy, less to maintain, less to operate. See how BANTAM fits your construction and maintenance picture —see your BANTAM distributor for a demonstration today. Or mail coupon.



SCHIELD Bantam Co.

SCHIELD BANTAM CO. AC-47
234 Park Street
Waverly, Iowa, U.S.A.

Please send me facts on the job-speeding BANTAM:

☐ Carrier Mounted ☐ Crawler Mounted ☐ Self-Propelled

Name.....Title.....

Address.....

City.....State.....

World's Largest Producer of Truck Cranes and Excavators

Purchasing

Assures Better Streets and Airport Runways

A new joint sealing compound, Manu-Tite, will soon be available for use on city streets, highways and airport runways. It is easily applied with an industrial caulking gun to seal joint ruptures and cracks and crevices in the pavement. Streets are strengthened to stand the abuse of heavy traffic, and runways will withstand the exhaust heat of jet aircraft. Further, Manu-Tite cannot be dissolved by gasoline, oil or jet fuels.

The new compound was developed by the MANU-MINE RESEARCH & DEVELOPMENT CO., READING, PA. It will be manufactured by American Testing Laboratories Inc., Lancaster, Pa., a Manu-Mine subsidiary.

A detailed description of Manu-Tite is available directly from the Manu-Mine Research & Development Co., or you may use the Post Card on the insert following Page 52. Circle No. 818.

Small-Size Roller for Parks & Sidewalks

Use this heavy-duty Con-Sol power roller for all of your compaction jobs on city sidewalks, parks, driveways, lawns and athletic fields, and for light patching jobs on streets and highways. The new Con-Sol may be used on almost any type surface, including grass, dirt, clay, asphalt and black top. The All-Purpose model is equipped with a handy sprinkler tank which prevents hot asphalt from sticking to the rollers.

The Con-Sol roller is powered by a 3¼-hp Briggs and Stratton engine, and is easily operated with an adjustable, vertical hand lever. Shifting is accomplished by pressing a crank-type foot lever, leaving both hands free to work the throttle and to steer.

A detailed description of the new

power rollers may be obtained from CONSOLIDATED INDUSTRIES, INC., WEST CHESHIRE, CONN. Write directly, or you may use the Post Card located for your convenience on the insert following Page 52. Circle No. 839.

Names New Distributors

New distributors to handle the sales, service and parts business on a complete line of "Payloader" tractors and tractor-shovels, are announced by THE FRANK G. HOUGH CO., 710 SUNNYSIDE AVE., LIBERTYVILLE, ILL. The company has also assigned additional territory to some of its present distributors. Territorial divisions are as follows:

Phillippi Equipment Co. will handle the "Payloader" line in the state of Minnesota, with headquarters in Minneapolis and branches in Duluth, Hibbing and Moorehead.

Rish Equipment Co. now serves the entire state of Ohio, with plants in Cleveland, Columbus, Dayton, Toledo, Cincinnati and Portsmouth.

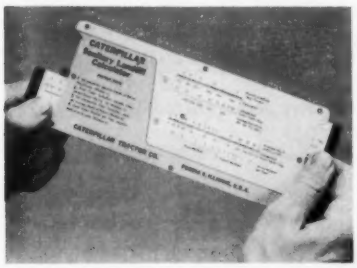
J. D. Evans Equipment Co. will serve the state of South Dakota. Headquarters are in Sioux Falls, and the company has a branch office in Rapid City.

Brandeis Machinery & Supply Corp. has added territory in Southern Illinois. The company has a new plant in Mt. Vernon.

State Equipment Co., located in Montpelier, will serve the state of Vermont.

Orton Equipment Co. will serve as the new Hough distributor in Stratford, Calif.

Calculator Solves Refuse Disposal Problems



A fast, easy way to get reliable solutions to many of your community's refuse disposal problems is with this new sanitary landfill calculator, introduced by the CATERPILLAR TRACTOR CO., PEORIA, ILL. The slide rule type unit answers

(*Continued on page* 238)

WILD®
HEERBRUGG

WILD N-III PRECISION LEVEL

Speed and ease of set-up and operation, yes! And with not the slightest compromise in absolute accuracy, versatility, and dependable ruggedness under virtually any condition.

Here, literally, is the standard of the world in precision levels, as proved over and over again by the finest geodetic and engineering facilities on Planet Earth.

THREE MODELS FOR EVERY REQUIREMENT

STANDARD METRIC AT $560.00: Reading direct to .1 mm, estimation to .01 mm. Use with Wild precision Invar Rods.

SPECIAL INDUSTRIAL AT $667.00: Reading direct to .001 inch. Use with Wild Stainless Steel Rods, 3' and 6' long.

SPECIAL ENGINEER AT $595.00: Reading direct to .0005 ft., estimation to .0001. Use with standard leveling rods.

All models have tilting screw, coincidence level and built-in optical micrometer.

WRITE FOR DETAILED INFORMATION, and use the Wild Heerbrugg advisory services without obligation.

WILD HEERBRUGG INSTRUMENTS, inc.

Main at Covert Streets Port Washington, N. Y. POrt Washington 7-4843

SALES • FULL FACTORY SERVICES

ON CRAWLERS TO DIG SERVICE DITCH ON TIME!

Gar Wood Buckeye 403

WORKS EVERY DAY, RAIN OR SHINE No "fair weather" machine, the full crawler-mounted 403 works in deep mud . . . sticky gumbo . . . the most adverse ground conditions. The 403 has greater stability, yet treads lightly to protect lawns and sidewalks.

LESS DOWNTIME—Tractor-type crawlers on the 403 are strong, dependable, trouble-free . . . last longer with less maintenance.

MORE PRODUCTION—Compact design means greater maneuverability in close quarters. Cuts up to 5 feet deep in 8 to 12 inch widths; 4 feet deep in 14 and 16 inch widths. Easily transported from job to job in a hurry on low-cost tilt-bed trailer.

GET ALL THE FACTS about how you can dig more ditch per dollar with a Gar Wood-Buckeye 403. See your Gar Wood-Buckeye Distributor or write to Customer Service Department, Gar Wood Industries, Inc., Wayne, Michigan.

GAR WOOD INDUSTRIES, INC.
Wayne, Michigan • Findlay, Ohio

CONSTRUCTION MACHINERY
TRUCK EQUIPMENT

Purchasing

(*Continued from page* 237)

such questions as land and equipment requirements, and the cost per ton for an efficient refuse disposal program. It is already being used by many governmental and state health officials throughout the world.

An explanatory booklet, furnished with the calculator, acts as a guide in determining the disposal needs for a particular community. It discusses such problems as types of refuse, the amount of refuse to be expected, and the hourly owning and operating costs of various sizes of equipment.

Detailed information on the new calculator may be obtained directly from the manufacturer, or you may use the Post Card located for your convenience on the insert following Page 52. Circle No. 823.

New Back-Hoe Attachment

Offered in combination with the efficient Davis loader, this new back-hoe attachment digs at right-angles to either side of the tractor, or to the rear, fa-

You won't worry about drinking water if you use

IGLOO WATER COOLERS

Make an IGLOO water cooler standard equipment with your working crews. Clear, cool water means better workers, more work.

IGLOO out-cools and out-lasts the old-time water barrel because it's corrugated for extra life, all-steel made for extra strength, galvanized to be rust-proof, leakproof with double locked seams and sanitary to the Nth degree. There's an IGLOO for every need—2 to 15 gallon sizes.

BETTIS CORPORATION
P. O. DRAWER 9365 • HOUSTON 11, TEXAS

LEADITE
The Pioneer Self-Caulking Material for C. I. Pipe

YOU CAN'T GO WRONG WITH

The pioneer self-caulking material for cast iron bell and spigot water pipe which, for more than 50 years, has shown water works men how well it makes a good tight joint that improves with age.

THE LEADITE COMPANY
Girard Trust Co. Bldg., Phila. 2, Pa.

No Caulking

CITY ENGINEER Wanted

Fast growing city in Midwest, population 30,000, wants competent engineer, age 35-45. Should be eligible for registration.

Job is principally administrative and applicants should have planning experience. Salary open.

Write Box 403
The American City
470 Fourth Avenue
New York 16, N. Y.

cilitating operation in crowded areas, and enabling the spoils to be dumped far to one side of the hole. The hoe uses the same pump as the loader and is mounted directly on the loader frame. It is easily attached and quickly removed from the tractor in less than five minutes.

New back-hoe attachment digs up to 13 feet deep in full view of the operator.

The new back-hoe attachment digs up to 13 feet deep in full view of the operator. A large, padded seat, equipped with foot rests and valve controls, revolves with the back-hoe boom and dipper stick, so that the operator is always facing in the right direction. A special selector valve gives the operator immediate control of either the loader or the back-hoe.

A detailed description of the new back-hoe attachment is available from MID-WESTERN INDUSTRIES, INC., 1009 S. WEST ST., DEPT. A, WICHITA, KANS. Write directly, or you may use the Post Card on the insert following Page 52. Circle No. 816.

Fisher-Pierce Appoints New Representative

Minnesota, North and South Dakota and portions of Iowa and Wisconsin will be served by the Dolan-Feldhaus Co., of Minneapolis, when the firm takes over as new representative for The Fisher-Pierce Co., South Braintree, Mass. The company manufactures photoelectric lighting controls.

AMERICA'S
HEADQUARTERS
FOR
FIRE EQUIPMENT
AND
POLICE EQUIPMENT
•
WRITE FOR
NEW CATALOGS
•
W.S. DARLEY & CO.
ESTABLISHED 1908
CHICAGO 12, ILLINOIS

Public Health Engineer Wanted

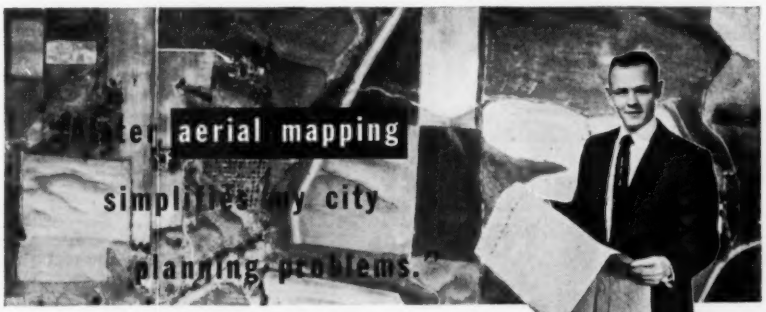
The City of Cedar Rapids, Iowa, is accepting applications for the position of Public Health Engineer.

Age, 23-50 years. Qualifications—Degree of Civil Engineering from an accredited school of engineering. Salary, $450-$525 per month, depending upon experience and background.

Applications must be returned by April 1, 1956.

Applications may be obtained by writing to:

Civil Service Commission
City Hall
Cedar Rapids, Iowa



—BURL A. PARKS City Planning Engineer, Davenport, Iowa

"Planning the extension of our street system beyond corporate limits would have been impossible without the topographical maps Alster & Associates made for us from aerial photography," writes Davenport's City Planning Engineer. "The maps of fringe areas make it simple to choose best locations for street grades, drainage, and sewer extensions and to examine proposed land subdivisions." *Learn how Alster mapping can simplify your survey problems.*

Free booklet tells how Alster methods cut survey costs up to 75%, get construction started weeks earlier!

Dept. A-2
6135 Kansas Ave., N.E., Washington 11, D.C.
29 E. Madison St., Chicago 2, Illinois

ALSTER & ASSOCIATES, INC.
AERIAL SURVEYS

Purchasing News

Hydra-Lift Features New Boom

A new hydraulic telescopic boom has been added to the redesigned Pitman Hydra-Lift so that operators using the truck crane can position loads in spots that have been virtually impossible to reach with standard equipment. The new Model 60 features several improvements over the old Model B Hydra-Lift, offered by the Pitman Manufacturing Company, of Kansas City, Mo.

The 6,400-pound capacity truck crane which requires only 40 inches of space behind any 2-ton or larger truck cab, with the aid of the new boom can enable an operator to position the boom with its load outside a window, extend the boom hydraulically through the window, set the load down, then retract the boom, and swing it clear. It telescopes from 17 to 27 feet, or 5 feet longer than standard tubular booms.

The telescopic boom handles pipe for a new water line.

Other features include hydraulically-operated outriggers as standard equipment which enable the operator—inside the truck or out—to set the outriggers by simply pushing two levers within reach without moving from his regular operating station. Heavy loads, too, may be raised or lowered without first positioning the boom.

Installation time and cost have been greatly reduced since the hydraulic cylinders, loadline winch, hydraulic pump, sheaves and cable, and hydraulic tubing are in place when the machine is shipped. Another improvement is the seamless steel tubing used almost exclusively for carrying hydraulic fluid instead of hose.

A detailed description may be obtained from PITMAN MFG. CO., at 300 WEST 79TH TERRACE, KANSAS CITY, MO., or use the Post Card on the insert following Page 52. Circle No. 845.

City of Winston-Salem (N.C.) sweeps downtown walks with their Tennant "75" Sweeper.

How a fast, compact TENNANT Sweeper...

sets a new standard in clean, LOW-COST sweeping

In busy downtown areas, where *clean* sweeping counts most, but is costly—a compact TENNANT Power Sweeper pays for itself fast. It not only *does the work of a crew of men;* it sets a new standard for clean work. You'll see the difference.

Sweeping easily around parked cars, its powerful brush-and-vacuum system rapidly cleans a 48" path. Picks up dust, dirt, paper, sand—the usual loose light litter found in gutters, on walks and in alleys. Does a remarkable job.

It's rugged . . . compact . . . easy to use; and superbly engineered for long, dependable service.

SPECIAL FEATURES

- Sweeps 4 to 8 times faster than by hand.
- Sweeps EXTRA CLEAN; has vacuum dust control.
- Dumps load mechanically.
- Cleans 48" path; can sweep flush with walls, curbs.
- Reverses instantly.
- Steers easily in traffic; has 38" wheelbase.
- Can also be used in PARKING LOTS, RAMPS, GARAGES, etc.

Write today for details.

G. H. TENNANT COMPANY
2520 N. 2nd St., Minneapolis 11, Minn.

TENNANT POWER SWEEPERS

SPECIALIZED MAINTENANCE EQUIPMENT

New Alternators for Cars and Trucks

The line of heavy-duty alternators put out by the Leece-Neville Company now features two new models. Both are designed to replace standard D.C. generators on passenger cars, light and medium trucks, buses, or other equipment which is driven regularly at slow speeds with frequent stopping and starting. One is for use with 6-volt electrical systems, and the other for 12-volt systems. An important feature is that a transformer may be attached to the alternator to give up to 800 watts of 110-volt portable power.

For further information, write the LEECE-NEVILLE COMPANY, 1374 EAST 51 ST., CLEVELAND 3, OHIO, or you may use the Post Card on the insert following Page 52. Circle No. 847.

This is one of the two new models Leece-Neville has added to its line of heavy-duty alternators. The units are designed to replace standard DC generators.

Chemical Manufacturer To Make Aluminum

The Olin Mathieson Chemical Corporation, reports Thomas S. Nicholas, president, plans to enter the aluminum industry with an initial investment of $120,000,000. Business will be conducted in the world's first fully integrated aluminum plant.

The new operation is the first in the aluminum industry to mine coal—directly on the site. This coal is providing the large power requirements for the reduction of alumina to pig aluminum

New facilities will be located in the Ohio River Valley. The alumina plant, the reduction plant, and the rolling mill will be on the Ohio River near Clarington, Ohio. Slightly upstream on the West Virginia side, the power plant will be built on a new major coal mine.

In order to help increase the supply of primary aluminum, the plants are being built under certificates of necessity issued by the United States Government.

Bauxite, a major raw material used in processing aluminum, will be shipped from Surinam (Dutch Guiana). Olin Mathieson has signed a long-term contract for its initial requirements of the product. First shipments are scheduled to arrive early next year.

Other products of the Olin Mathieson Chemical Corporation, Baltimore, Md., that are known and used in the municipal field include: HTH granular and HTH tablets for hypochlorination of water supplies, sewage effluents and swimming pool water; PH-Plus for water softening and pH control; soda ash, caustic soda, and carbon dioxide.

Swimming Pools

Experimentations with various materials for the construction of swimming pools has included the use of gunite, steel, plastics, fibre glass and, of course, reinforced concrete.

Reinforced concrete is used for Cardinal pools. The walls and floors are poured monolithically. The complete pool interior is then plastered to a smooth finish and a glazed ceramic tile is installed at the water line.

Cardinal pool installations include filtration, chlorination, boards and lighting. Normal maintenance equipment includes a vacuum cleaner, an automatic surface skimmer, a pool brush, and a leaf skimmer.

For a folder and suggestions, write CARDINAL POOLS, INC., 11525 N. EXPRESSWAY, DALLAS, TEX., or you may use the Post Card on the insert following Page 52. Circle No. 848.

NO TIME LOST!
LOADING OR LAYING ITS LOAD

A STANDARD STEEL PRESSURE DISTRIBUTOR GIVES EQUAL CIRCULATION THROUGHOUT THE SPRAY BAR FOR A UNIFORM SURFACE FROM CURB TO CURB FOR LONGER WEAR

STANDARD STEEL
PRESSURE DISTRIBUTOR

The Model 424 can be loaded in quick time for a "fast getaway". A two-way cleaning system guarantees a clean spray bar at the end of the day. First, the material is sucked out of the bar and back into the tank. Then by turning one small valve, cleaning solvent is released into pump and spray bar (without contaminating the asphalt in the tank). No time lost in tinkering — no time lost in loading — Standard Steel 424 keeps going all day long far ahead of the "gravel gang"

WRITE FOR CATALOG 424

OTHER PRODUCTS OF STANDARD STEEL

Maintenance Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Street Flushers, Construction Brooms.

Built to the Highest Standard PD-1

Standard Steel Works, Inc. NORTH KANSAS CITY, MO.

Two Parking Meters on One Pipe Standard

The Duncan-Duplex parking meter, a new concept of two parking meters on one pipe standard, is introduced by the DUNCAN PARKING METER CORP., 835 N. WOOD ST., CHICAGO 22, ILL.

Each meter head may be faced in one of three directions, eliminating unnecessary motorist confusion. Since the parking meter appropriate to a particular stall is the meter facing it, the problem of inserting coins into the wrong meter is avoided.

The meter mechanism used in the Duncan-Duplex is the same efficient mechanism used in the Duncan-Miller Model 60. Consequently, Duplex mechanisms are completely interchaneable, either by unit or by part, with any single Duncan-Miller Model 60 meter, used in conjunction with the Duplex system.

Maximum standardization is easily attained with a Model 60 and Duplex installation.

A 5-second "lift-out" mechanism provides fast, easy access for quick servicing. Further, the unit offers a wide range of coin combinations and time limits.

A detailed description of the Duncan-Duplex parking meter may be obtained from the Duncan Parking Meter Corp. Write the company directly, or you may use the Post Card on the insert following Page 52. Circle No. 846.

HOW SOON WILL YOUR CITY FACE A WATER SHORTAGE?

Last year more than a thousand American communities suffered the dire calamity of a water shortage, due in many instances to inadequate distribution facilities. Many more this year are facing the same grim crisis. In fact, it has been estimated by government officials that America must spend $25 billion in the next ten years to catch up on water and sewer needs.

If yours is a growing city, the time to provide for adequate water and sewer facilities is now.

Plan for Permanence with

CAST IRON PIPE

When you enlarge your city's water and sewer system, install it for keeps and save tax dollars. Specify CAST IRON because it lasts for generations, needs practically no maintenance, is tops in dependability and lowest in long run cost.

* * * * *

Our Company does not manufacture pipe but has long supplied the nation's leading pipe manufacturers with quality iron from which pipe is made.

WOODWARD IRON COMPANY
WOODWARD, ALABAMA

Introducing John R. Snell and Associates

A new consulting engineering firm, John R. Snell and Associates, was opened recently at 6103 Lake Lansing Dr., Haslett, Mich. The firm is headed by John R. Snell, former head of the Civil and Sanitary Engineering Department at Michigan State University.

Mr. Snell's varied experience includes service as chief engineer and president of Engineering Services, Inc., Boston consulting engineers; special lecturer in Sanitary Engineering at the Massachusetts Institute of Technology; and head of the Water and Sanitation Section, First Service Command, Boston, for the U. S. Corps of Engineers.

He is a member of the AWWA, the APWA, and the American Society of Engineering Education.

McDonald Mfg. Celebrates 100th Anniversary

The A. Y. McDonald Mfg. Co., founded in 1856, is celebrating its Centennial Anniversary this year, according to a recent announcement. Located in Du-

buque, Ia., the firm manufactures electric pumps and domestic water systems. It also offers plumbing and water-works brass goods; floor, shower, and roof drains; and many items for the oil industry.

In addition to its manufacturing operations, A. Y. McDonald operates a large wholesale business. This includes the distribution of plumbing, heating, cooling and oil equipment, plus builders and industrial supplies, throughout the entire Middle West.

Elberta, Ga., Council Reports On Its New Manager Government

BELIEVING that its 7,000 residents should be kept informed of developments in the local government, the Elberta, Ga., City Council recently distributed a pamphlet telling of accomplishments during the first six months of council-manager operation. Some of these forward steps are quoted below:

- Put financial affairs of the city on a strict budget basis.
- Installed centralized purchasing system resulting in many savings and economies.
- Departed from long-standing tradition by opening and operating the schools without borrowing funds. This has been made possible by the economies effected.
- Paid back all accounts (net reduction of $13,200 in accounts payable) so that monthly accounts are now current and cash discounts being taken. Reduced notes payable by $8,500.
- Although some pay increases have been made and the Manager's salary added to the payroll, total salaries and wages were $1,028 less than for the same six months period in 1954.
- Abolished the city automobile "nuisance" license tax.
- Established stamp system for better enforcement of beer and wine tax.
- Replaced the city's antiquated building, electrical, and plumbing codes with modern national standard codes for the protection of our citizens.
- Adopted personnel ordinance requiring municipal employment to be solely on the basis of merit and fitness and establishing uniform compensation for like services.
- Sent 12 employees to training schools to improve the effectiveness of service.
- Collected over $9,800 in delinquent taxes and assessments; we will use

THE 1956 HENRY BACKHOE
with Hydraulic OUTRIGGERS

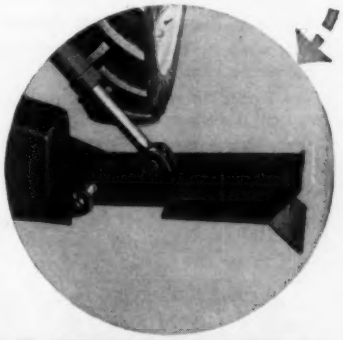
A Henry digs wherever digging is to be done—in close quarters or the wide open spaces. It digs a full 10½ feet deep—loads 8 feet high.

With the new hydraulically controlled outrigger the backhoe and tractor level up on sloping ground in seconds to give straight down digging. This feature plus Henry's ability to dig at any angle within its 160-degree swing arc allows digging under otherwise impossible operating conditions.

Henry's hydraulically-operated telescopic boom stretches automatically when digging. Its parallel circuit control valve—combined with a regulator valve that adjusts down-pressure to soil conditions —gives smooth, fast digging and loading in one continuous motion.

Team this Henry Backhoe with the Henry Industrial Tractor Shovel and you get the world's finest digging and loading unit. Ask your implement dealer for more Henry facts, or write us today.

HENRY HYDRAULIC OUTRIGGER *(optional equipment)* for fast leveling on sloping, uneven ground



"YOU CAN DO IT BETTER WITH A HENRY"

HENRY HYDRAULIC *all-purpose* EARTH MOVERS

HENRY MANUFACTURING COMPANY, INC.
1700 N. CLAY STREET • TOPEKA, KANSAS
BACKHOES • BACKFILL BLADES • SCRAPERS • TRACTOR SHOVELS

every means available to collect alll overdue taxes and assessments.

— Established garbage collection on a schedule of two pickups per week instead of one.

— Erected 75,000-gallon water tank and completed 12-inch water main for industrial development of former airport site.

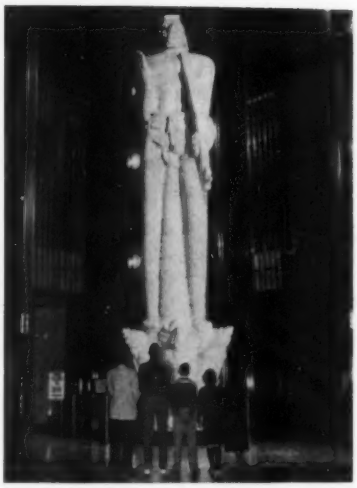
— Purchased new police radio equipment with matching funds from Federal Civil Defense and participated in several other equipment acquisition programs of this type.

— Completed engineering work for early construction of Colored athletic park.

— Plans for the early future: comprehensive planning and zoning ordinance; tax mapping and equalization of property values; adequate street-paving program to include construction of curb and gutter and storm sewers; sewage-treatment plant; park and recreation development with facilities for all age groups; development of off-street parking lots; improvements to water and electric distribution systems.

St. Paul—Nagasaki Town Affiliation

THE FIRST town affiliation to be formed between a city in the United States and a city in Japan is that between St. Paul and Nagasaki.



St. Paul's "God of Peace" stands at the focal point of Memorial Hall in City Hall.

Mayor Joseph E. Dillon proclaimed the affiliation in St. Paul on November 30th, with Ambassador Sadao Iguchi representing Mayor Tsutomu Tagawa of Nagasaki. The Japanese city presented 20 flowering cherry trees to St. Paul, and the United Nations Association of Nagasaki distributed thousands of small Kokeshi dolls to residents of St. Paul who wrote to ask for them.

In return, Mayor Dillon presented to some of the visiting Japanese dignataries, including the Bishop of Nagasaki, small bronze replicas of the large statue of the Indian "God of Peace" that has become St. Paul's trade-mark.

Effects of Polio Vaccines In Eight Countries

A STUDY GROUP of the World Health Organization (WHO), meeting in Stockholm this past November, reviewed progress in polio control in eight countries.

Typical of the preliminary results of the large-scale polio vaccination programs in the United States are reports available from New York State and Minnesota. Out of 450,000 children, aged 6-10, who were vaccinated in New York State, 153 contracted polio, 18 cases being paralytic. In a comparable "control" group of 280,000 unvaccinated children of the same age group, 178 contracted the disease, 59 being paralytic. Figures for Minnesota showed 24 cases among 112,000 vaccinated children, against 22 cases among 33,000 unvaccinated.

In Canada only three cases of polio

TASSCO TOMCAT

ALL-ALUMINUM

STREET NAME SIGNS THAT PUT YOUR TOWN ON THE MAP... AND KEEP IT THERE!

Clear, vivid and perfectly legible! This is the street name sign that has earned the highest acclaim of hundreds of up-to-the-minute communities throughout the land.

WHY?

The Tassco Tomcat is easily readable by night as well as by day.

"Scotchlite" makes the Tassco Tomcat highly reflective, and from any angle, thanks to Tassco eye-angle design.

It is virtually indestructible and tamperproof, weatherproof, boltless . . . all aluminum construction.

The Tassco Tomcat is clean in design, enhancing the modern, friendly decor of typical American communities.

COST?

No higher, and frequently much less than ordinary framed porcelain or embossed signs.

WRITE FOR "A Guide to Effective Traffic Safety"

The Sign of TASSCO Traffic Safety

TRAFFIC and STREET SIGN COMPANY
84 FOUNDRY STREET • NEWARK 5, N. J.

Incidence of Paralytic Polio After Vaccination Tests

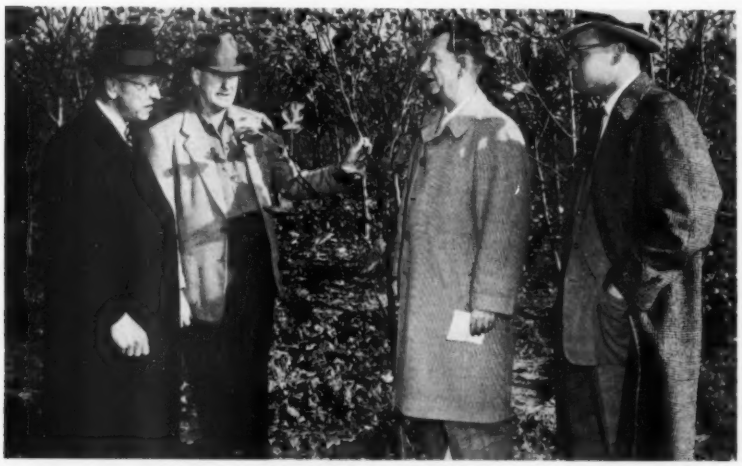
	Vaccinated Children	Unvaccinated Children
New York State	4 per 100,000	21 per 100,000
Minnesota	2.7 " "	30.1 " "
Canada	1.1 " "	5.4 " "

had been reported in the four weeks after vaccination among 860,000 children.

The table above summarizes these findings:

Denmark and Germany have done some large-scale vaccinating with good results; while France, Sweden, and the United Kingdom have done mainly experimental work. In South Africa no figures were available concerning the reduction of polio which might result from vaccinations. Most of the countries plan larger programs of vaccination for the coming year.

Springfield Readorned



Between the local Kiwanis Club and the municipal Water, Light, and Power Department, Springfield, Ill., will again be bedecked with sylvan beauty. Since 1949, some 2,200 young trees, purchased by the club have been maturing in the nursery of the utility. The beautification program was begun to enable the city to replace elms destroyed by disease. For the nominal cost of $2 each to cover the cost of preparing the trees for replanting, Springfieldians may make a choice between scarlet maple, white ash, and tulip trees. Inspecting some of the trees are (left to right): Franklin Schlitt, past president of the club; Fred Davey, chairman of the club's agriculture and conservation committee; George M. Oliver, commissioner of public property; and Fred Blythe, Kiwanis president.

PROTECT YOUR INVESTMENT

The PERMANENT, ALL-PURPOSE ICE RINK FLOOR

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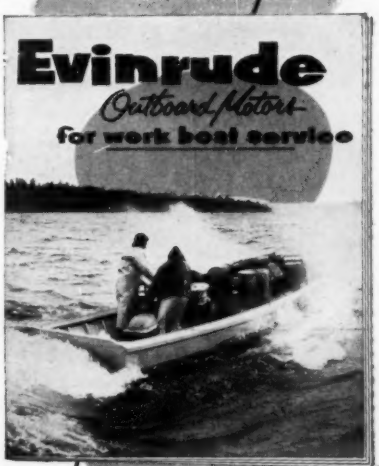

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About People

A special director's meeting at the **Duro-Test Corp.,** North Bergen, N. J., resulted in the election of a new vice-president, Smith A. Goff. Mr. Goff, who has headed the company's West Coast operations since 1953, returns East to assume his new administrative duties.

Scheduled to succeed William D. Kyle, Jr., recently resigned president of the **Line Material Co.,** is Rodgers G. Wheaton, according to Max McGraw, president of the McGraw Electric Co. Mr. Wheaton's former position as L-M vice-president in charge of marketing and sales will be handled by Earle W. Williams. The position of sales manager will be taken over by Wilson M. Dusenberry. Located in Milwaukee, Wis., the Line Material Co. is a division of McGraw Electric.

R. G. Wheaton

E. W. Williams

When Don Farmer takes over as new regional sales manager for the **M-B Corp.,** New Holstein, Wis., he will service all Western states, as well as the Canadian provinces of Vancouver and Alberta. Mr. Farmer was previously associated with the Ford Motor Co. and the Allis-Chalmers Mfg. Co.

Three new sales representatives to handle the company's line of air-sampling equipment are announced by Elmer E. Fleck, president of **Research Appliance Co.,** Pittsburgh, Pa. These include James R. McQuaide, Philadelphia; Bartholomaus & Associate, New York; and Lyle F. Howe, Washington, D. C.

After 45 years with the **Pittsburgh-Des Moines Steel Co.,** Pittsburgh, Pa., John E. O'Leary announces his retirement. Mr. O'Leary has served as general sales manager of the firm for the past 26 years. He is succeeded in this position by T. W. Fauntleroy.

J. E. O'Leary

T. W. Fauntleroy

News from **O'Brien & Gere,** consulting engineers, Syracuse, N. Y., informs us of the appointment of Walter K. Neubauer as an associate member of the firm. Mr. Neubauer will head the company's department of water supply engineering.

Bryan M. Blackburn, treasurer of the **R. D. Cole Mfg. Co.,** Newnan, Ga., died Saturday, December 17th. He was 72 years old. Mr. Blackburn joined the company following his graduation from the Georgia School of Technology in 1905. He was associated with the engineering department until 1924, when he became treasurer of the firm. In addi-

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tion to his activities with the American Society of Mechanical Engineers and The Newcomen Society, Mr. Blackburn was one of the founders of the Steel Plate Fabricators Association.

Samuel Burgess, 71, vice-president of the **Nichols Engineering & Research Corp.,** New York City, died recently in Merrick, L. I. Well-known in the refuse incinerator field, Mr. Burgess had been with Nichols since 1938. During this time he had been in charge of construction and field operations.

Samuel Burgess

In an effort to achieve greater sales coordination, **The Oliver Corp.,** of Chicago, Ill., has realigned certain management functions. C. L. Hecker, first vice-president of the firm, will serve as general sales manager in charge of all sales and service functions of the farm equipment branches, Export and Industrial Sales Division, and the Oliver Outboard Motors Division. At the same time, L. P. Richie, also a vice-president, will have charge of the company's manufacturing activities in its nine Midwestern and Eastern plants.

A recent meeting of the board of directors of the **Allis-Chalmers Mfg. Co.,** Milwaukee, Wis., saw the election of a new executive vice-president, Willis G. Scholl, and a new vice-president to head the firm's Tractor Group, Boyd S. Oberlink. Mr. Scholl is a former group vice-president for A-C, while Mr. Oberlink was previously vice-president and general manager of the company's Construction Machinery Division. Allis-Chalmers also announces the appointment of E. J. Mercer as general manager of the Construction Machinery Division. Herbert K. Kingsbury will manage product sales for the centrifugal pump section of the company's Norwood Works.

W. G. Scholl

B. S. Oberlink

The death of Joseph Logan Hodgson on December 17 is reported by the **National Water Main Cleaning Co.,** New York City. Mr. Hodgson had served as a salesman for the A. P. Smith Mfg. Co. and the Joseph G. Pollard Co., working in the Southeastern United States. He had recently been serving as an advisor to the National Water Main Cleaning Co.

After 20 years with the General Motors Corp., Howard R. Canada joins the **Four Wheel Drive Auto Co.,** Clintonville, Wis., as director of parts and service. The company manufactures heavy-duty, all-wheel-drive trucks.

H. Lloyd Nelson, director of market research, promotion and product scheduling for the **United States Pipe and Foundry Co.,** Birmingham, Ala., died recently at the age of 52. Mr. Nelson had been with U. S. Pipe and Foundry since 1924, serving in various capacities in the firm's sales department. He was a member and former director of the AWWA, served as secretary-treasurer for three sections of the Association, and was a recipient of the Fuller Award.

From Jack E. Heuser, general sales manager for the **Le Roi Division** of the **Westinghouse Air Brake Co.,** Milwaukee, Wis., comes news of the appointment of William F. Briney to manage the Division's construction industry sales. Mr. Briney will be responsible for planning the sales of portable air compressors, Tractairs, rock drills and other Le Roi products.

W. F. Briney

New general sales manager of the **Jaeger Machine Co.,** Columbus, Ohio, is J. D. Anderson, former divisional sales manager for the company. Mr. Anderson succeeds J. H. Yearling, who has been elevated to the position of director of market research for Jaeger.

Two new salesmen have been added to the sales organization of the Gamon Meter Division, **Worthington Corp.,** Harrison, N. J. H. J. Stolz will represent the company in the San Francisco area, and E. A. Bagnell will serve Worthington customers in the Los Angeles area.

George B. Moseley has been appointed vice-president in charge of sales for **Chase Brass & Copper Co., Inc.,** Waterbury, Conn. Chase Brass & Copper is a subsidiary of the Kennecott Copper Corp.

A number of new sales staff appointments and promotions are announced by Robert H. Morris, vice-president and general sales manager of the **Mueller Co.,** Decatur, Ill. These include Russell L. Jolly, new Midwest Section sales manager; Paul B. Watts, sales representative in the Chicago area; Dan Gannon, Western Section sales manager; Richard D. Kitchen, Southwest Section sales manager; Robert J. Thomas, sales representative in the Louisiana-Mississippi area; Robert J. Ott, sales representative in Mississippi and a major portion of Alabama; and J. K. Potts, sales representative in the company's Los Angeles sales office.

The board of directors of the **American Cast Iron Pipe Co.,** Birmingham, Ala., announces the election of Arnold J. Herrmann as executive vice-president. Mr. Herrmann has been with Acipco for the past 41 years, last serving as vice-president in charge of sales and as secretary of the firm. His duties as secretary will continue.

A. J. Herrmann

When Ellsworth B. Doelp takes over as new district manager for the **Hardinge Co., Inc.,** York, Pa., he will make his headquarters at 205 W. Wacker Dr., Chicago, according to a recent announcement. Mr. Doelp will be in charge of Hardinge process equipment sales in the states of Illinois, Indiana, Missouri, Arkansas, Oklahoma, Kansas, Nebraska, Iowa and parts of Texas, Wisconsin, Michigan and Kentucky.

The most recent addition to the executive staff of **Helmsley-Spear, Inc.,** New York City, is Frederick E. Marx, new vice-president of the firm. Mr. Marx is the former vice-president in charge of appraisals and surveys for Wood, Dolson Co., Inc.

Scheduled to assist Jason M. Elsas, manager of the New Orleans (La.) branch of **Fulton Bag & Cotton Mills,** is Peter H. Walmsley, former administrative assistant of the company's general sales office. The New Orleans branch is located at 1400 Annunciation St. Main offices of Fulton Bag & Cotton Mills are also located in New Orleans.

P. H. Walmsley

New manager of market development and sales training for the **Chain Belt Co.,** Milwaukee, Wis., is W. B. Marshall, formerly sales promotion manager. G. H. Pfeifer takes over the vacated position of manager of sales promotion and advertising.

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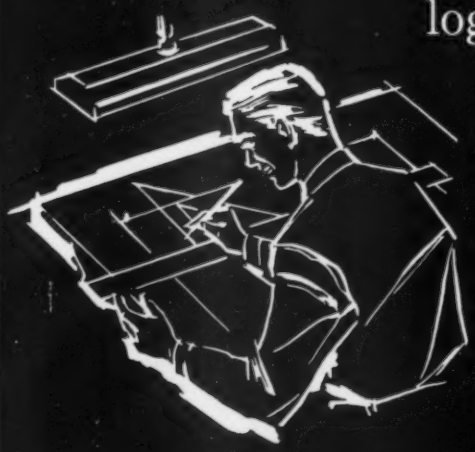

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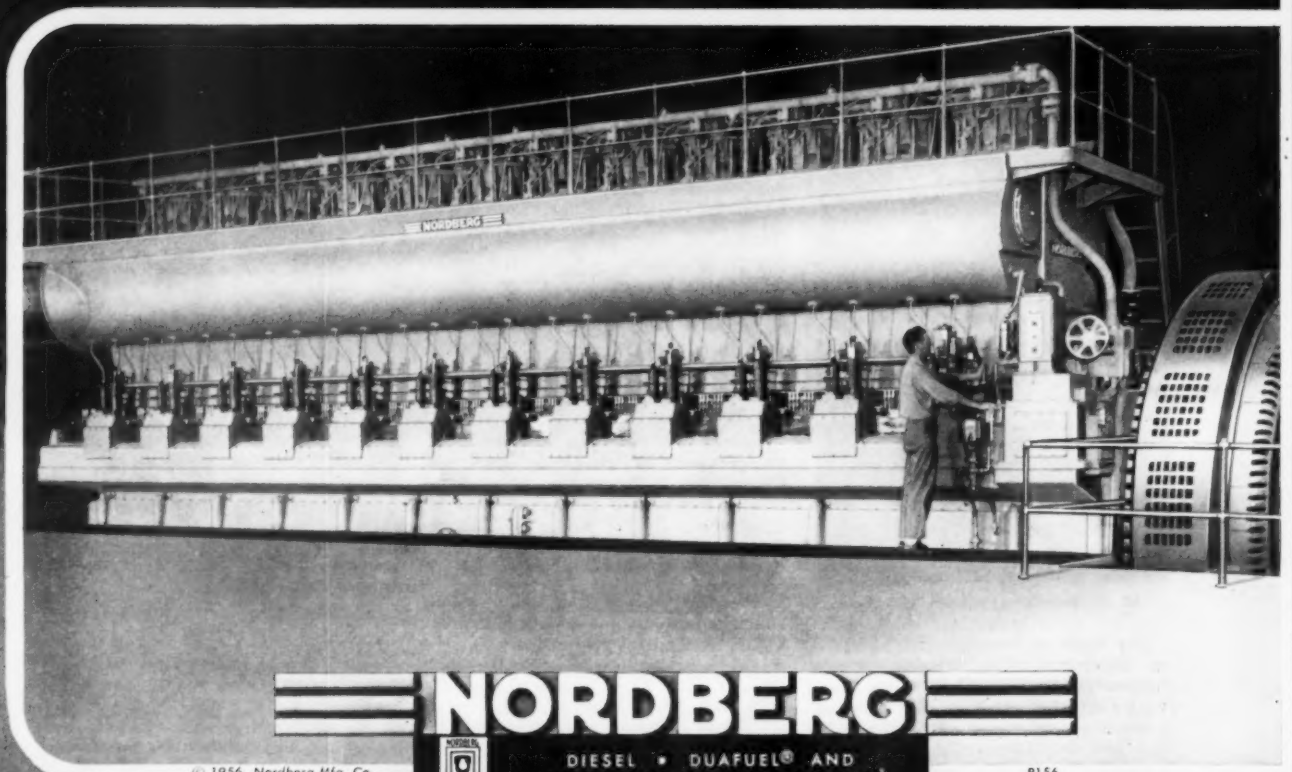

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Modern standby power protects Warren's water supply

Chemical Building at City of Warren's new water works.

Cat D397 protects Warren's water supply.

The City of Warren, Ohio—awarded the title of "All-America City, 1955"—has a water system that's a model for communities of its size. In normal operation three electrically driven pumps handle an average of 10 to 12 million gallons a day. Water is taken from three different elevations in Mosquito Lake, screened, pumped to the chlorination plant, passed on to the settling basins, filtered and finally pumped into the city mains.

What happens in case the power fails? The water keeps on flowing in full volume because CAT* Diesels take over the job. A D397 Engine is standby power on the main pump, and can deliver 10 million gallons a day as long as necessary. It starts automatically when a power failure occurs.

Emergency power for the purification plant is supplied by a D326 Electric Set which starts instantly when the lights go out. And a D318 pumps water from the reservoir to the purification plant automatically on a high service "on and off" basis.

The Warren Water Department chose Caterpillar equipment for this vital duty after careful study. Dependability, economy and sure, fast starting were factors in the decision, and the Cat-built Engines scored at the top in each respect.

Talk over your standby power needs with your Caterpillar Dealer. He has a wide range of engines and electric sets to meet your requirements, and his service and parts facilities will help keep them in peak operating condition.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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Manufactured and Sold in Canada by: Sperry Gyroscope Ottawa, Limited, Ottawa, Ontario, Canada

Two 2¼ yd. Michigans strip asphalt after scarifying with retractable teeth mounted on bucket.

Strips 3600 yds. of asphalt in 8 hours with two Michigan 175A Tractor Shovels

More and more contractors are finding that Michigan Tractor Shovels will handle jobs that have always been considered too tough for rubber-tired equipment. Here's a case in point. C. J. Wilson, Chicago contractor, fitted 1-inch steel scarifier teeth to one of his two Michigan 175A Tractor Shovels to remove 3½ miles of old asphalt on two four-lane streets.

The asphalt surface averaged 3 to 4-inches thick, up to 9-inches at some intersections—a mixture of asphalt, limestone dust, stones up to 1-inch diameter and chunks of concrete—average weight about 3200 lbs. per yard. Wilson found that his two Michigans handled the job 70% faster than a crawler-loader and one Michigan.

C. J. Wilson inspects the 1" steel scarifier teeth he installed on his Michigan 175A.

Used crawler and Michigan

Before he decided to use the scarifier, Wilson used a crawler-loader to cut and scrape the asphalt and loaded it with a 2¼-yard Michigan 175A. This method produced oversized hunks of asphalt up to 20 ft. square which had to be broken up before they could be loaded out. When the weather was hot, the "breaking-up" chore was stubborn and time-consuming. Furthermore, the crawler tracks damaged the macadam base.

Michigans scarify and load

With the heavy-duty scarifier teeth on the Michigan, Wilson found that he could cut the asphalt into strips as much as a block long. The teeth engage when the bucket is dragged backwards with down-pressure to hold them in the asphalt. On the forward pass, they retract automatically and do not interfere with normal use of the bucket.

The two 2¼ yd. Michigans worked a tandem operation. One did all the cutting so fast that it doubled back to assist the other machine which spent full time loading and cleaning-up. Production was as high as 3800 yds. in 8 hours, averaged 3600 yds.—compared to 2100 yds. a day the old way.

Handles tough jobs on rubber

Like C. J. Wilson, many other Michigan owners are finding that this Tractor Shovel will actually improve production on jobs which have never even been tried on rubber. The complete power-train—torque converter, power-shift transmission, planetary axles—was designed and built entirely by Clark, specifically engineered to give this machine more useable power and traction than you've ever seen on rubber. For proof, ask your Michigan distributor to demonstrate. You name the job!

Michigan is a trade-mark of Clark Equipment Co.

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2495 Pipestone Road
Benton Harbor 7, Michigan

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